VOLUME XXIV NUMBER EIGHT

THE NATIONAL GEOGRAPHIC MAGAZINE

AUGUST, 1913

CONTENTS

The Ascent of Mont Blanc

WALTER WOODBURN HYDE

With 69 Illustrations

Gems of the Italian Lakes

ARTHUR ELLIS MAYER

With 13 Illustrations

PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
WASHINGTON, D.C.

$2.50 A YEAR 25 CTS A COPY

XUM

NATIONAL GEOGRAPHIC SOCIETY

HUBBARD MEMORIAL HALL

AVENUE OF THE PRESIDENTS AT M STREET, WASHINGTON, D. C.

HENRY GANNETT . . . PRESIDENT
O. P. AUSTIN . . . . . SECRETARY
GILBERT H. GROSVENOR, DIRECTOR AND EDITOR
JOHN OLIVER LA GORCE . ASSISTANT EDITOR
O. H. TITTMANN . . . VICE-PRESIDENT
JOHN JOY EDSON . . . . . TREASURER
F. B. EICHELBERGER . ASSISTANT TREASURER
GEORGE W. HUTCHISON, ASSISTANT SECRETARY

BOARD OF MANAGERS

1911-1913

ALEXANDER GRAHAM BELL
Inventor of the telephone

HENRY GANNETT
Chairman of U. S. Geographic Board

J. HOWARD GORE
Prof. Emeritus Mathematics, The Geo. Washington Univ.

A. W. GREELY
Arctic Explorer, Major Gen'l U. S. Army

GILBERT H. GROSVENOR
Editor of National Geographic Magazine

GEORGE OTIS SMITH
Director of U. S. Geological Survey

O. H. TITTMANN
Superintendent of U. S. Coast and Geodetic Survey

JOHN M. WILSON
Brigadier General U. S. Army, Formerly Chief of Engineers

1912-1914

O. P. AUSTIN
Statistician, Bureau Foreign and Domestic Commerce

CHARLES J. BELL
President American Security and Trust Company

JOHN JOY EDSON
President Washington Loan & Trust Company

DAVID FAIRCHILD
In Charge of Agricultural Explorations, Dept. of Agric.

C. HART MERRIAM
Member National Academy of Sciences

GEORGE R. PUTNAM
Commissioner U. S. Bureau of Lighthouses

GEORGE SHIRAS, 3D
Formerly Member U. S. Congress, Faunal Naturalist, and Wild-Game Photographer

GRANT SQUIRES
New York

1913-1915

FRANKLIN K. LANE
Secretary of the Interior.

HENRY F. BLOUNT
Vice-President American Security and Trust Company

C. M. CHESTER
Rear Admiral U. S. Navy, Formerly Supt. U. S. Naval Observatory

FREDERICK V. COVILLE
President of the Washington Academy of Sciences

JOHN E. PILLSBURY
Rear Admiral U. S. Navy, Formerly Chief Bureau of Navigation

RUDOLPH KAUFFMANN
Managing Editor The Evening Star

T. L. MACDONALD, M. D.

S. N. D. NORTH
Formerly Director U. S. Bureau of Census

To carry out the purpose for which it was founded twenty-three years ago, namely, "the increase and diffusion of geographic knowledge," the National Geographic Society publishes this Magazine. All receipts from the publication are invested in the Magazine itself or expended directly to promote geographic knowledge and the study of geography. Articles or photographs from members of the Society, or other friends, are desired. Contributions should be accompanied by an addressed return envelope and postage, and be addressed:

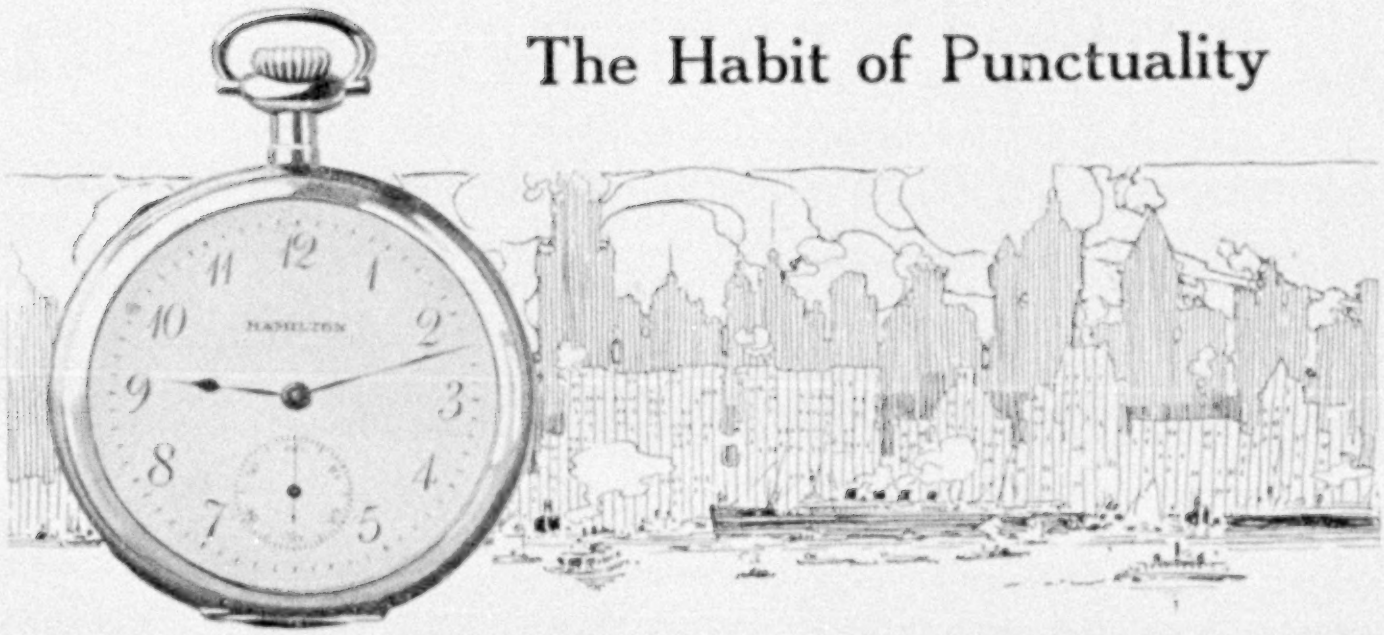
GILBERT H. GROSVENOR, EDITOR

ASSOCIATE EDITORS

A. W. GREELY
C. HART MERRIAM
O. H. TITTMANN
ROBERT HOLLISTER CHAPMAN
WALTER T. SWINGLE
ELIZA R. SCIDMORE
ALEXANDER GRAHAM BELL
DAVID FAIRCHILD
HUGH M. SMITH
N. H. DARTON
FRANK M. CHAPMAN
FRANK EDWARD JOHNSON

Entered at the Post-Office at Washington, D. C., as Second-Class Mail Matter

Copyright, 1913, by National Geographic Society, Washington, D. C. All rights reserved



The Habit of Punctuality

Hamilton Watch

"The Railroad Timekeeper of America"

Being on time, getting to a place when you say you will be there and having a thing done when you promise its completion are very largely matters of understanding and appreciating accurate time.

Punctuality and precision become a hobby with the owner of a Hamilton Watch. The Hamilton constantly sets an example of right-to-the-second accuracy.

Over one-half (56%) of the railroad men on American railroads where Official Time Inspection is maintained carry the Hamilton Watch.

Hamilton Watches are made in correct sizes for men and women and sold by jewelers everywhere.

Movements only are $12.25 and upward. Complete watches, certain sizes, are $38.50 to $150.00. Ask your jeweler about them; also about fitting your present watch case with a Hamilton movement.

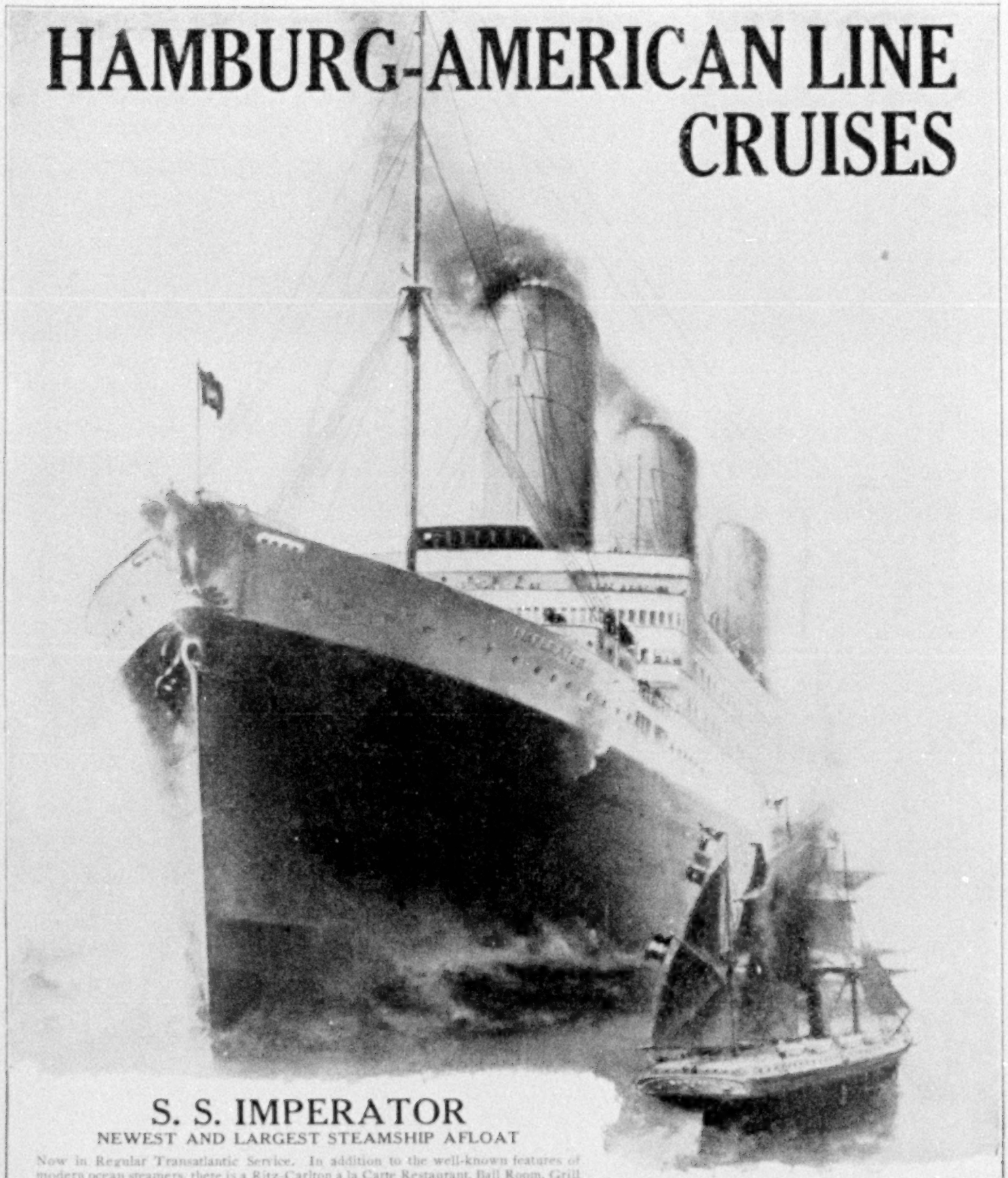
Write for "The Timekeeper"

It illustrates and describes the various Hamilton models and is a book well worth reading if you are thinking of buying a fine watch.

Engineer John Kryselmeier of the Missouri-Pacific Railroad. He has carried a Hamilton Watch 14 years.

HAMILTON WATCH COMPANY, Lancaster, Pennsylvania

HAMBURG-AMERICAN LINE CRUISES



S. S. IMPERATOR

NEWEST AND LARGEST STEAMSHIP AFLOAT

Now in Regular Transatlantic Service. In addition to the well-known features of modern ocean steamers, there is a Ritz-Carlton a la Carte Restaurant, Ball Room, Grill Room, Private Dining Rooms, Pompeiian Bath, a Swimming Pool, and a Gymnasium.

VACATION CRUISES TO JAMAICA AND THE PANAMA CANAL

Special Summer Rates Now in Effect by the new, fast Twin-Screw Steamships "CARL SCHURZ" and "EMIL L. BOAS" and the well-known "PRINZ" steamers of our ATLAS SERVICE. Calling at **Cuba, Hayti, Colombia, Costa Rica, Nicaragua.**

CRUISES

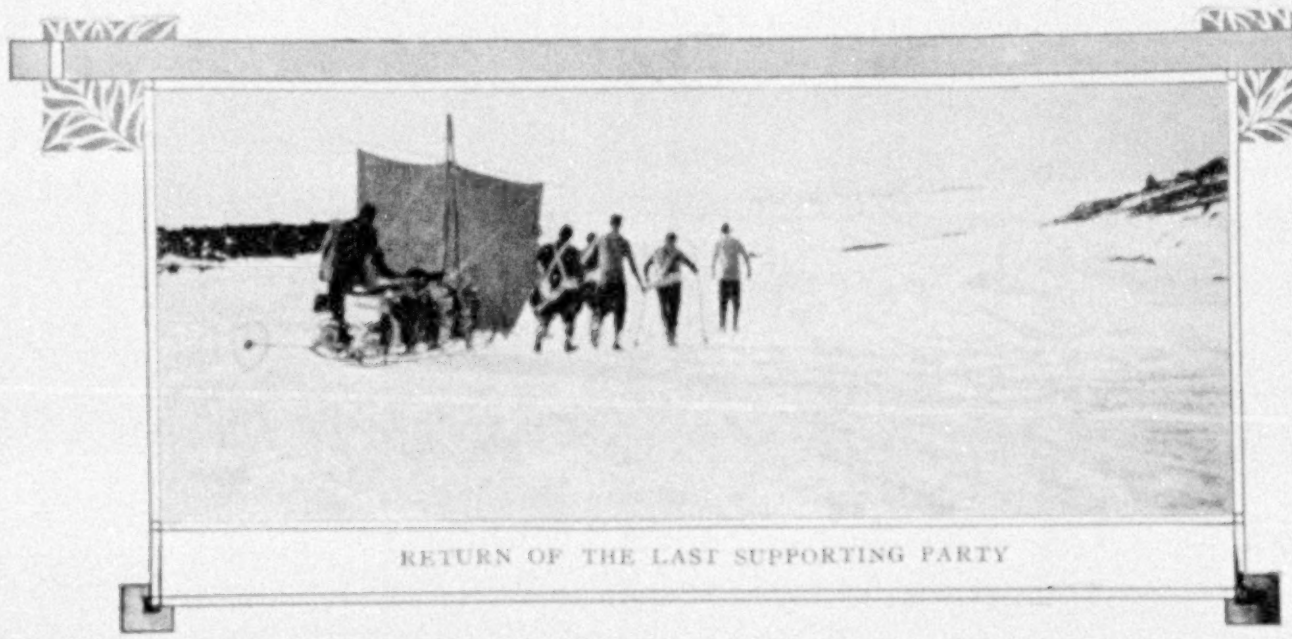
AROUND THE WORLD AND THROUGH THE PANAMA CANAL, JANUARY 27, 1915

TO THE LAND OF THE MIDNIGHT SUN, FROM HAMBURG DURING AUGUST

Write for beautifully illustrated books, stating cruise

HAMBURG-AMERICAN LINE, 41-45 BROADWAY, NEW YORK CITY

Boston Philadelphia Pittsburgh Chicago St. Louis San Francisco



RETURN OF THE LAST SUPPORTING PARTY

"The Undying Story of Captain Scott"

Everybody's Magazine

FOR SEPTEMBER

THE September instalment gives a wonderful account of the actual dash to the Pole after all preparations that human ingenuity could think of had been made. As you read this absorbing story you wonder were ever human beings tormented by such heart-breaking obstacles as seemed to continually haunt Scott and his men on their final venture.

And yet, throughout every line of this marvelous journal, hope and resolution never for an instant waver.

Read this sublimely tragic story and learn what manner of man the author of this world-epic was.

The photographs are really wonderful.

Get EVERYBODY'S for September

15c a Copy *Everywhere*

XUM

A JUNGLE CONCERT—GROUP OF PHILIPPINE NATIVES LISTENING TO A VICTOR PHONOGRAPH

World-Wide Travel by Photograph

THIRD SERIES, "SCENES FROM EVERY LAND"

20,000 Words of Text, 250 Wonderful Illustrations, and 24 Pages in Colors

By GILBERT H. GROSVENOR

Editor National Geographic Magazine

Here is a fascinating book which tells you about many curious and little-known peoples, shows you strange and picturesque customs in out-of-the-way corners of the world, and brings vividly before you many of the wonders of nature.

You do not have to read long pages of print; each of the 250 pictures tells its own story, and the few words of text beneath each serve to bring out the important points.

The book is printed on paper of the finest quality, and tastefully bound in buckram or in full red leather, so that it forms a delightful and useful gift.

No copies of the First and Second Series of "Scenes" can be supplied, as the entire edition is out of print.

CUT ON THIS LINE

DEPT. H, NATIONAL GEOGRAPHIC SOCIETY,
16th and M Streets, Washington, D. C.

_____, 1913.

Please send_____copies of Third Series **"Scenes from Every Land,"** bound in_____

for which I enclose herewith_____dollars.

If several copies are desired, write names and addresses and send with your card.

Name_____

Street Address_____

City and State_____

Bound in Royal Buckram, postpaid, $1.00
Bound in Full Leather, postpaid, $2.00 (De Luxe Edition)

8-13

"100°," you say?
"That's much better"

In sickness (or in health) the only *safe, sanitary* way is for the patient to have his own Fever Thermometer. It prevents infection. Helps both patient and doctor. Enables the doctor to keep in close touch with the patient. Saves the patient money, the doctor visits.

"Tycos" *Fever Thermometers*

Your doctor can't have a separate Fever Thermometer for each of his patients. You can't tell in whose mouth or for what disease his thermometer was last used. So have your *own*. One for each member of the family is the *hygienic* way—you wouldn't think of using another's tooth brush.

In New Safety Pocket Case (patented)	
½ Minute Registration . . .	$1.75
1 Minute Registration . . .	1.50
2 Minute Registration . . .	1.25

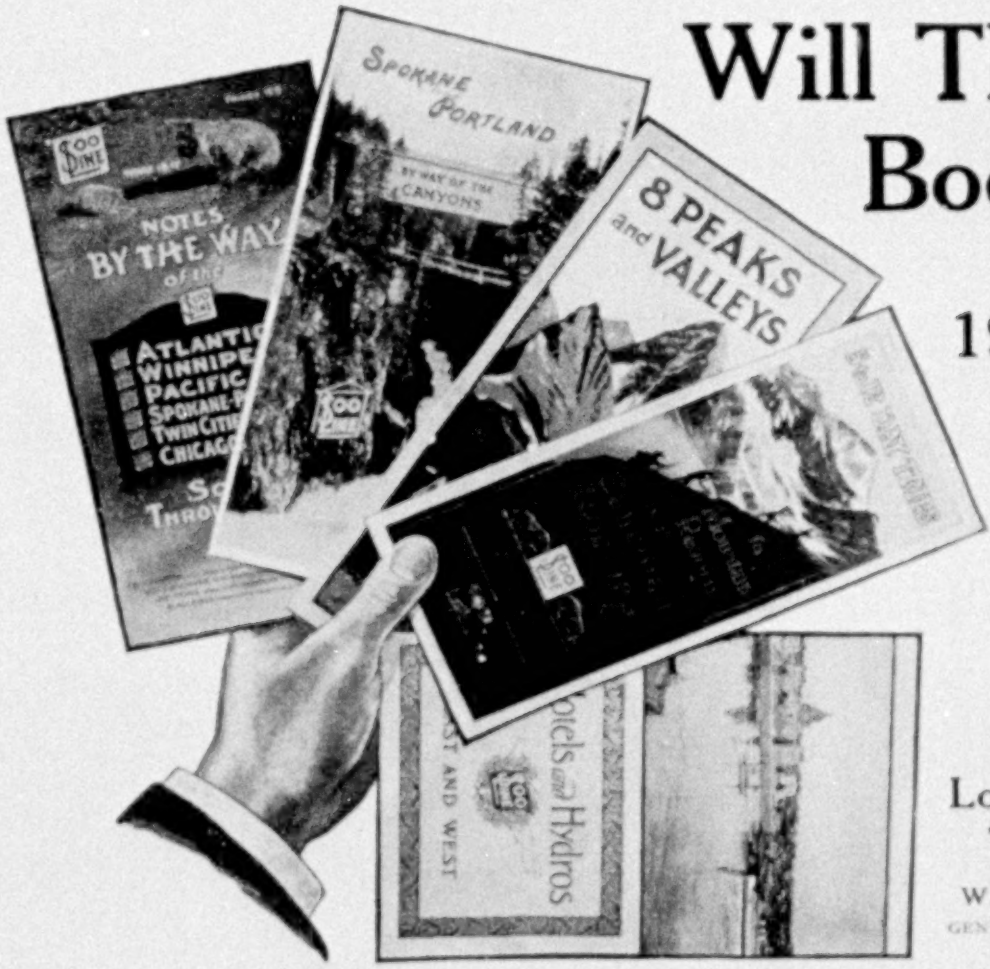
BOOKLET FREE

"Temperature—Its relation to Health and Comfort." Contains much interesting information.

MADE ONLY BY

Taylor Instrument Companies 65 Ames Street, Rochester, N.Y.

Largest Makers of Thermometers for all purposes; Barometers and Scientific Instruments.



Will These Books Help

To Decide Your

1913 Vacation

No Trip Anywhere Could *be more* Delightful and Invigorating Than Those Described Herein:

Notes By The Way . . .	2c.
Hotels and Hydros . . .	10c.
Eight Peaks and Valleys,	10c.
Via The Canyons . . .	2c.
Mountain Trips	6c.

"Pictured Stories" FREE

Mailed to any address

Low Round Trip Fares

W. R. CALLAWAY
GEN'L PASSENGER AGENT
Minneapolis, Minn.

"SOO LINE"

Our Quality-Service Guarantee On Dinner-Ware

Dishes bearing the trade-mark name "Homer Laughlin" (on the under side) are made in the largest pottery in the world. They are of a high quality, guaranteed to stand the supreme test of time and service. Forty-one years of successful experience stand behind the excellence of

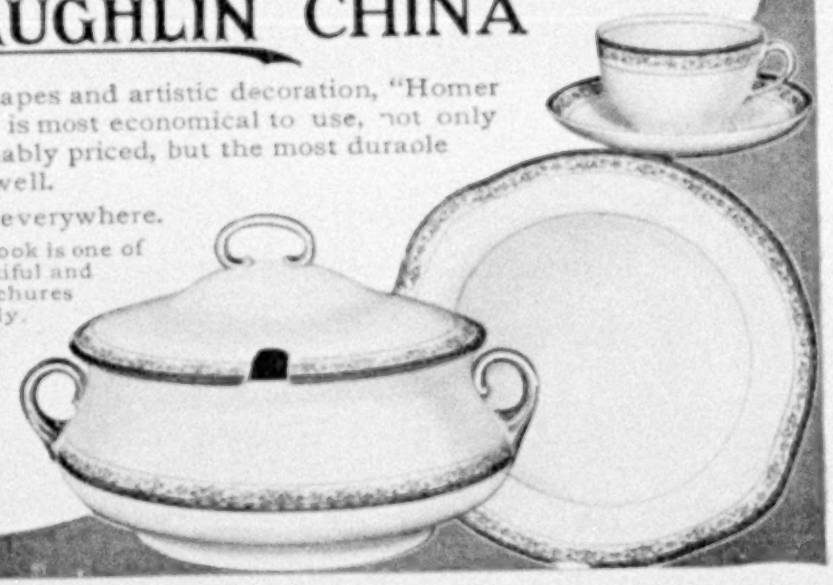
HOMER LAUGHLIN CHINA

With its graceful shapes and artistic decoration, "Homer Laughlin" dinner-ware is most economical to use, not only because it is reasonably priced, but the most durable china made, as well.

Sold almost everywhere.

The China Book is one of the most beautiful and interesting brochures produced recently. It's well worth a careful reading. Send today for your Free copy.

The Homer Laughlin China Company
Newell, West Virginia



RECOMMENDATION FOR MEMBERSHIP

in the

National Geographic Society

The Membership Fee Includes Subscription to the National Geographic Magazine

DUES: Annual membership in U. S., $2.00; annual membership abroad, $3.00; Canada, $2.50; life membership, $50. Please make remittances payable to National Geographic Society, and if at a distance remit by N. Y. draft, postal or express order.

Please detach and fill in blank below and send to the Secretary

_____ 191

To the Secretary, National Geographic Society,
Sixteenth and M Streets Northwest,
Washington, D. C.:

I nominate _____

Address _____

_____

for membership in the Society.

_____

8-13 (Write your address)

Those Who Had the Courage to Buy Bonds in 1907 *Profited*

In 1907 there existed, as there exists at the present time, a decided depression in the prices of sound investment bonds.

Such depression is occasioned by the only influence which ever affects really sound marketable securities, namely, high rates for money.

At present prices the investor has a rare opportunity to secure thoroughly dependable bonds yielding from 4½% to 6%.

To secure the largest possible return, investors have frequently and unwisely sacrificed the recognized elements of safety. Money may now be invested, if good judgment be exercised, at the largest possible return without speculative risk.

Our facilities, judgment and experience are offered those seeking sound investments.

Whether you are in a position to buy one bond or have a considerable sum to invest, you will find our services of value.

Circular A.N.-5 listing a variety of Municipal, Railroad and Public Utility Bonds sent on request

N. W. Halsey & Co.

NEW YORK 49 Wall St. | PHILADELPHIA 1421 Chestnut St. | CHICAGO La Salle and Adams Sts. | SAN FRANCISCO 424 California St.

HALSEY & CO., Incorporated
55 Congress St., BOSTON

LONDON Morton Otis, Agt. | GENEVA Switzerland

A Comprehensive List of Bonds

Legal for Savings Banks and Trust Funds

as well as

A Selected List of Railroad and Industrial Bonds

may be had by sending for our latest Circular, S. G. Many of the bonds included in this circular have been purchased extensively by banks and insurance companies and are equally well adapted to the needs of the private investor.

A. B. Leach & Co.

Investment Securities
149 Broadway, New York

Chicago Boston | Philadelphia London, Eng. | Buffalo Baltimore

Industrial Bonds

Netting 6%

Nearly one-sixth of issue already matured and paid promptly.

Bonds paid serially from one to six years.

Cash investment in properties equals nearly three times amount of bond issue.

Earnings largely in excess of fixed charges.

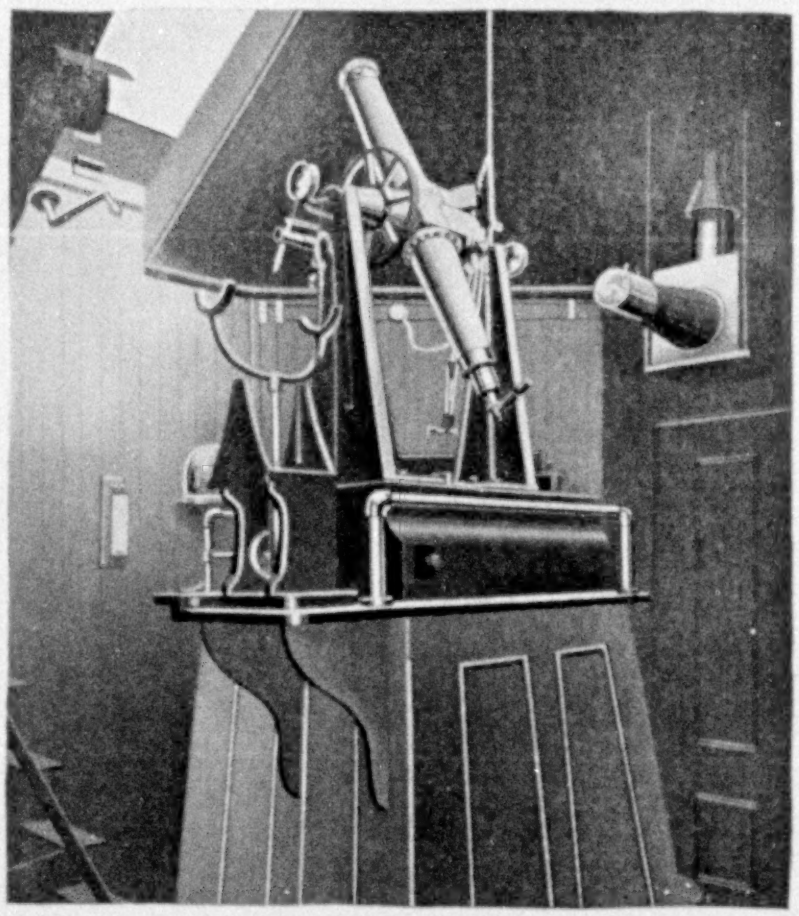
Management experienced and efficient.

Bonds guaranteed by responsible individuals.

Ask for Circular No. 814 D

Peabody, Houghteling & Co.

(Established 1865) 10 S. La Salle St., Chicago



As regular as the very stars

Waltham timepieces know no masters except the stars in their courses.

No exterior authority—governmental or otherwise—sets the "standard" for Waltham. Waltham precision is the precision of Nature herself.

In the astronomical observatory illustrated above, the transit of the stars across the meridian at Waltham is observed twice each week *right at the plant*. The delicate mechanism in the Standard Time Room is thus regularly checked and the standard for the whole works established *by direct reference to the sources of time*.

No doubt this accounts, in some measure, for the expression one so often hears: "Waltham time *is* standard time."

It is no mean distinction that at Waltham is the largest and most famous watchmaking plant in all the world. This reputation rests fundamentally upon the Waltham Watch as an Instrument of rare and exceeding accuracy. The scientific resources and equipment of Waltham are unequalled. As the result, more Waltham Watches receive the class A certificate each month from the famous Kew Observatory in England than any other make of watch in the world.

Should you desire any information about Waltham Watches, Automobile Timepieces, or Chronometers, kindly write to the Waltham Watch Company, Waltham, Mass. We will gladly give your communication complete attention.

Waltham Watches

VOL. XXIV, NO. 8 WASHINGTON AUGUST, 1913

THE NATIONAL GEOGRAPHIC MAGAZINE

THE ASCENT OF MONT BLANC

BY WALTER WOODBURN HYDE
UNIVERSITY OF PENNSYLVANIA

I FIRST saw the monarch of Swiss mountains from the town of Geneva. Far away on the horizon, 60 miles to the eastward, the great white pyramid, clearly visible from the city streets, lifts its hoary bulk aloft into the azure sky, far above all the surrounding peaks of Savoy. And at evening its huge mass of snow and ice is a sheen of red and golden light, whose brightness seems only to have the substance of some fantastic cloud reflecting the fiery hues of the western sun.

But when viewed from the village of Chamonix, grandly situated at its base, the effect is still more imposing. I had approached the tiny town—so famed in the story of Alpine climbing—from Argentière, which lies at the entrance of the romantic vale of Chamonix.

Everywhere the eye is charmed with the harmonious blending of nature's varying tints. Green meadows and dark pine woods heighten the beauty of the snow-white glaciers, which extend like frozen torrents from the summit down into the very valley, their lower courses separated by great forest-clad promontories projecting upward into the sea of ice and crowned with huge rocks carved into obelisks and other titanic shapes, intermixed with patches of snow.

The mind is almost overwhelmed with the grandeur of the massive wall inclosing the valley all along its eastern side, with its succession of noble peaks covered with eternal snow, and the stately, needle-like rocks—the so-called Aiguilles—which seem to pierce the sky, the whole mass culminating just over the village in the central summit, the mountain monarch towering in regal majesty amidst his court of subservient attendants.

As we gaze up at his huge outline, we see two long, irregular ridges, like enormous arms, descending from the giant's shoulders, the two rounded peaks just below the summit on either side, Mont Blanc du Tacul and the Dôme du Goûter, the one ending in the Aiguille du Midi, the other in the Aiguille du Goûter, whose spurs reach far down into the valley below (see pages 862 and 874).

Between these mighty arms is the course of the snow valley, sloping upward to just below the summit, which gives to the mountain its pyramidal effect when seen from a distance and its peculiar character and name, and as we look up from the village street, the effect is overpowering. Above us, all above us, with its broken and jagged slopes and majestic glaciers, is the mass of the mountain, its great snowy dome surmounting all, and apparently almost directly over us.

In the moonlight it is grandest of all, when summit and sides are masses of glittering crystals, and withal seemingly so near and so easy of access, though it

Photo by S. G. Wehrli

GÉNERAL VIEW OF THE MONT BLANC CHAIN

This great mountain mass is divided between France, Switzerland, and Italy. France has the lion's share, Italy the steepest slope, and Switzerland the most fertile portion. This photograph was taken from the Flégère (5,925 feet), one of the peaks of the Aiguilles Rouges, on the other side of the Chamonix Valley.

XUM

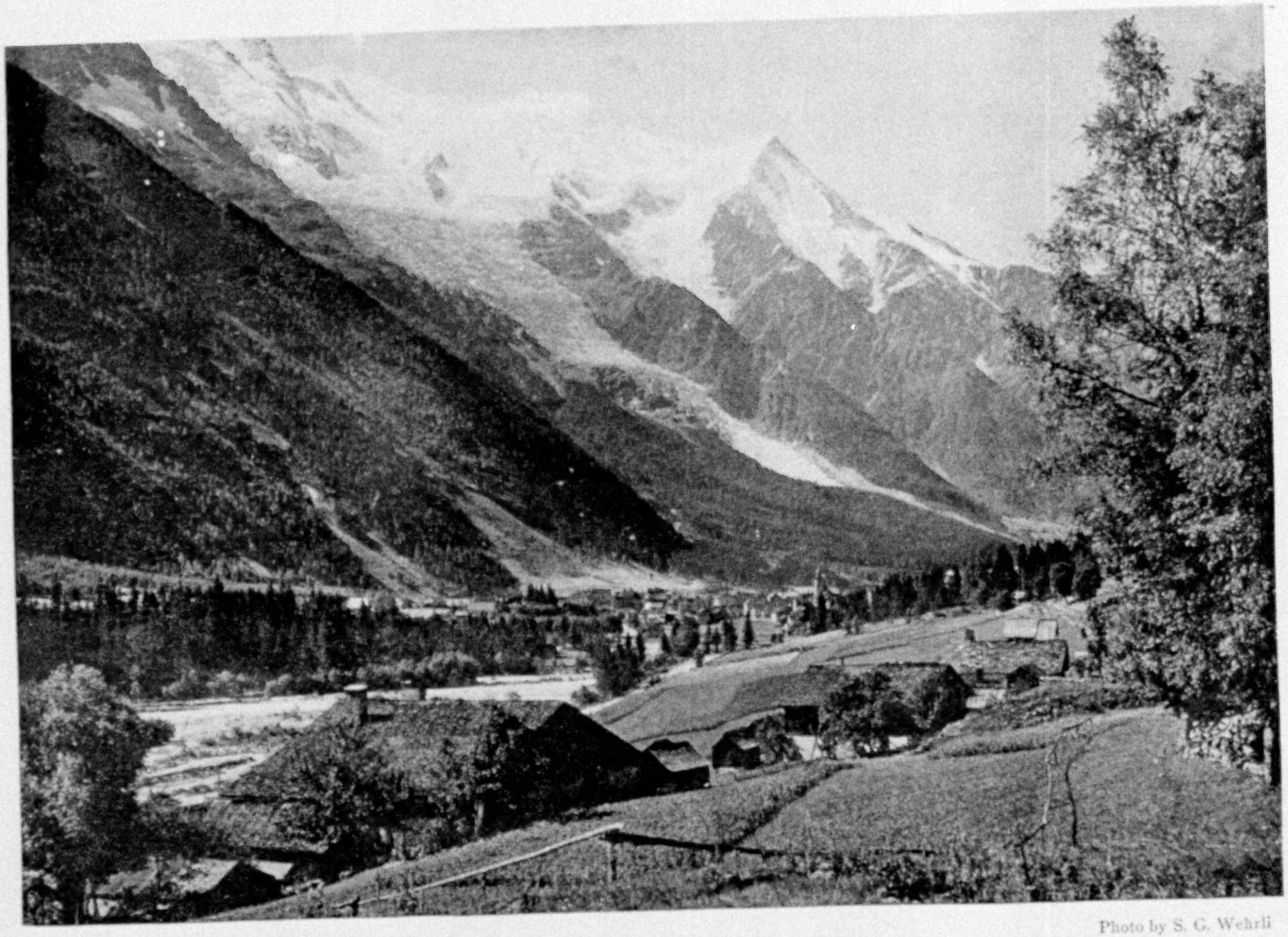


Photo by S. G. Wehrli

CHAMONIX AND MONT BLANC

Few tourist resorts anywhere in the world have greater charm than Chamonix. Everything that nature and art can accomplish has been done to render this little town attractive. It is crowded both in summer and winter with visitors of every nationality and rank

Photo by S. C. Wehrli

ARGENTIÈRE CHURCH

Argentière is the next village to Chamonix, further up the valley. It stands at the foot of the tremendous Argentière Glacier, which descends from Mont Dolent (12,543 feet) almost into the village street

took many a season's diligent search and toil before a way was found by which to scale these dizzy heights.

Courted and frequented as the regal white mountain is now, until a little more than a century and a half ago it was scarcely known beyond the precincts of its own valley. Its name cannot be traced farther than 1742, though the history of the village and valley of Chamonix goes back to the Norman conquest.

Doubtless even in Roman days this region was inhabited, as an inscribed boundary stone of Vespasian's day is still visible on the valley side of the Col de la Forclaz, probably on the old Roman road over the Mont Blanc Range, which connected Geneva with Aosta; and the name Chamounis, which first occurs in the Mercator Atlas of 1595, is undoubtedly a corruption of "champs muni," the French translation of "campus munitus," the medieval Latin name of the valley, the fortified camp being the little valley with its mountain walls.

But the first authentic date in the history of the valley is 1091, when Aymon, Count of Geneva, bestowed on the Benedictine abbey of St. Michel de la Cluse, near Turin, the "campus munitus"; by the 13th century a priory was founded, whose priors enjoyed almost absolute jurisdiction over the wretched peasantry, until, scarcely a century ago, the valley was finally delivered from the infamous rule of the canons of Sallanches, to whom the priory had been transferred in 1519, and the commune of Chamonix destroyed the monastery and the Chamoniards became free men. During the last few years of this struggle travelers first began to visit the wonderful sights of Chamonix, which drew them henceforth in ever-increasing streams.

THE LOVER AND THE FRIGID LADY

Even earlier, visitors had occasionally come to look at the "glaciers," as Mont Blanc was then called. One of the earliest of whom we have any record was a Monsieur Pays, who wrote a letter from Chamonix, May 16, 1669, to a lady whom he had the misfortune to over-admire. Upbraiding her for her coolness, he wrote in part:

"In my despair at leaving you, I vowed I would throw myself over the first convenient place. But until now, though for 15 days I have ascended and descended the most dangerous mountains of Savoy and skirted the brinks of a thousand precipices, I have not thrown myself over. . . . I must not deceive you. The pleasure of looking at your portrait in this frightful country has always kept me back when I proposed to execute my intention. . . . Here, madame, I see five mountains which are just like you. Five mountains, madame, which are pure ice from top to bottom." Our charming lover doubtless referred to the five glaciers on the Chamonix side of the range.

It is therefore clear that too much stress should not be laid on the "discovery" of Chamonix by the two English travelers, Pococke and Windham, in 1741, though their visit undoubtedly brought the little town into greater prominence. Their party of eight, accompanied by five servants and many pack-animals, left Geneva in June, arriving in Chamonix on the third day.

As every one then supposed the valley was inhabited by brigands, the party was armed to the teeth and, not daring to enter any house, camped out in the open air, keeping up fires and watches all night. Next day they had an opportunity of meeting a number of these supposed brigands, as several of the poor peasants served them as guides to the great glacier, known as the "Mer de Glace." After a day's experience on this part of the mountain, the party returned to Geneva, carrying back wonderful tales of the horrors of crevasses and avalanches experienced in their heroic undertaking. A large granite block carved with the names of these two worthies and the date of their visit is still to be seen near the glacier.

THE SHOEMAKER'S SON INTRODUCES THE MOUNTAIN TO THE WORLD

Their account roused the curiosity of one Peter Martel, the son of a French refugee shoemaker of Geneva, who led another party to Chamonix the next year. In 1744 he published an account of his

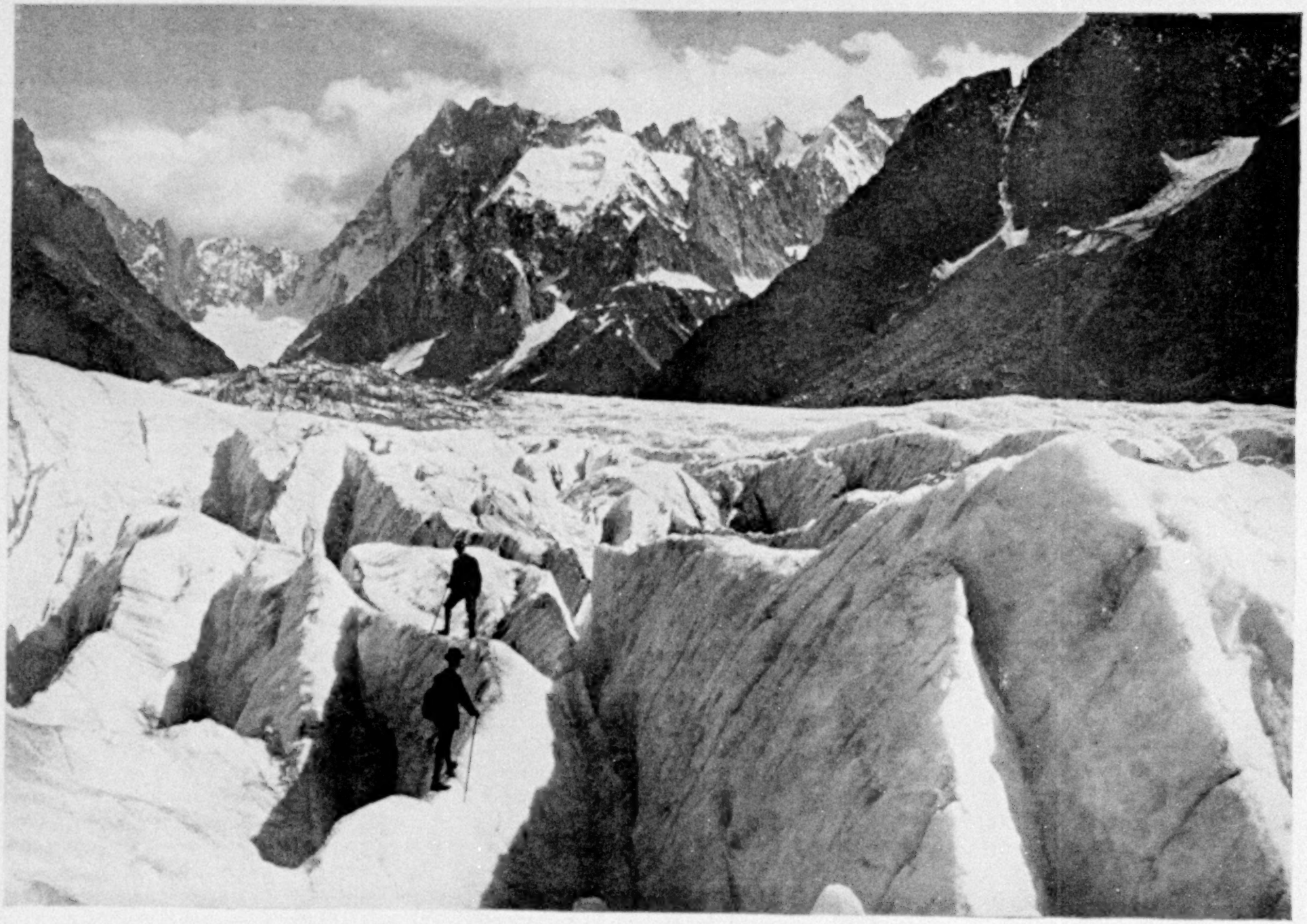


Photo by S. G. Wehrli

THE MER DE GLACE

The Mer de Glace, or "sea of ice," is the most famous of Swiss glaciers. Rising in the higher regions of Mont Blanc, it flows down to the valley, an enormous ice-cataract 4½ miles long and varying in breadth from a mile and a quarter to half a mile

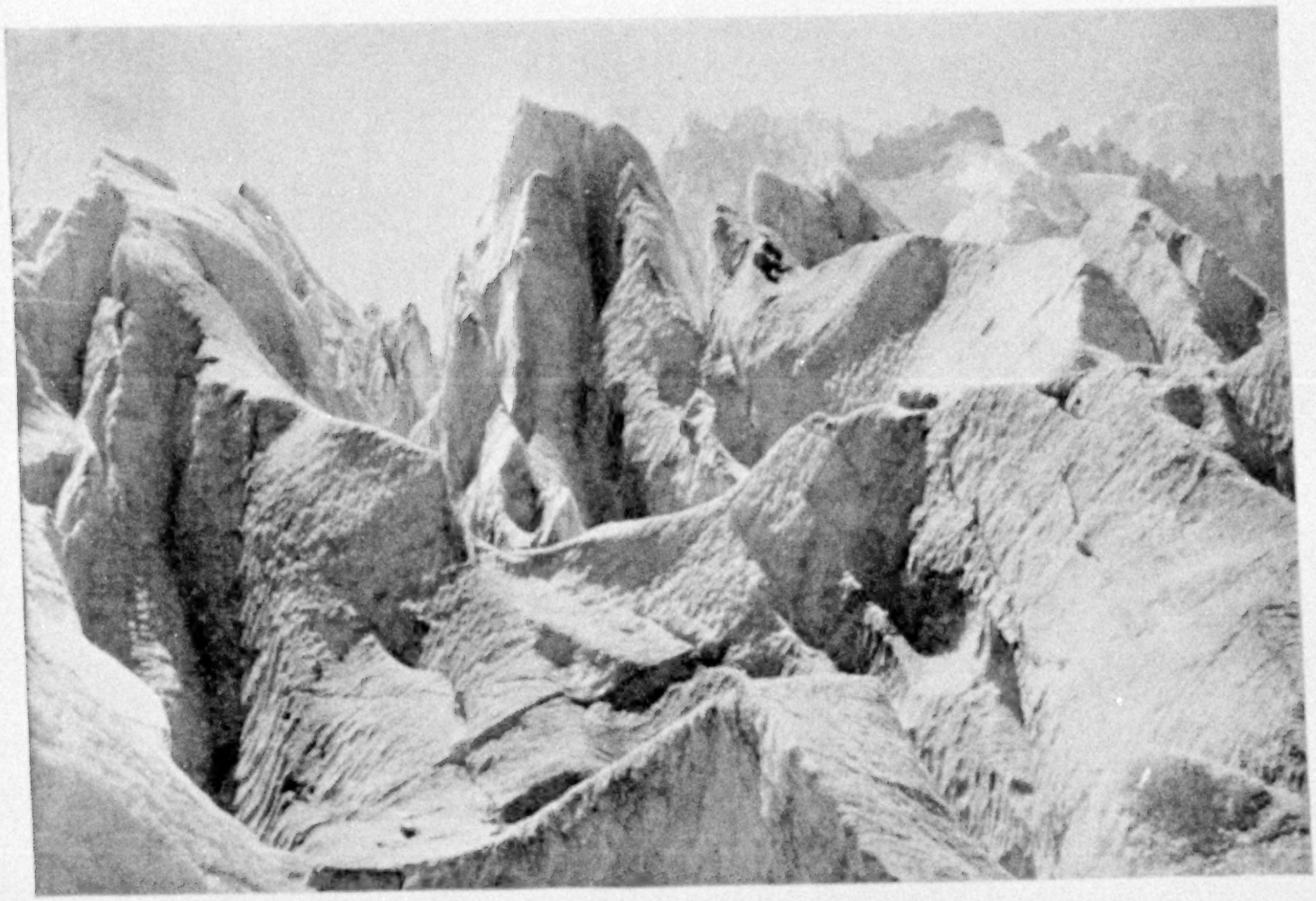


Photo by G. R. Ballance

SERACS ON THE MER DE GLACE

In all ascents where glaciers have to be crossed these *seracs* are a constant source of difficulty and danger. Always avoided where possible, it sometimes happens that they have to be climbed, and it takes an experienced mountaineer to select one sufficiently stable to bear the weight of a party.

visit, together with that of Windham and Pococke, in the form of two letters.

These descriptions are interesting, for they give us a good idea of Chamonix of that period. It seems that at this time only the lower ends of the glaciers were visited, though there were already guides and porters. Windham makes no mention of Mont Blanc itself, an omission so remarkable as to make us think the summit was invisible during his visit; but Martel mentions the mountain four times, and as he is the first to make use of the name in print, the honor of introducing the great "white mountain" to the world must be given to this poor shoemaker's son.

It now became the fashion to visit the "glaciers." Many people came to Chamonix; among others, a young professor from the Geneva Academy, named de Saussure. He climbed the peak of the Brévent (see picture, page 869), the mountain inclosing Chamonix on the west, and conceived the idea of ascending Mont Blanc itself for the purpose of making some scientific experiments. So he proclaimed a reward for any one who should discover a route to the summit.

As yet, probably no one had thought of ascending the mountain; at that time only crystal searchers and chamois hunters ever ventured on its upper reaches. And although now a few feeble attempts were made, notably by Pierre Simon, it was not for 15 years that the first serious attempt to gain the reward was made.

EARLY ATTEMPTS AT THE ASCENT

Four peasants climbed the narrow, pine-covered ridge of rock called the Montagne de la Côte, which separates the two glaciers of Taconnaz and Bossons, and got some little distance up the

ice of the "junction" above; but, discouraged at finding they could not go up and down in one day and afraid of spending a night on the ice, they gave up the attempt.

Eight years more elapsed before three other chamois hunters, in 1783, tried the same route. They spent the night at the top of the Montagne de la Côte, just below the ice fields, and at daybreak started bravely up the glacier; but they soon gave it up, owing to the overpowering desire of one of their party to sleep.

The great heat of the sun, which is experienced even at high altitudes on the glaciers, seems also to have greatly perplexed these peasants, as well as the superstition, which is yet prevalent in some parts of the Alps, that it is fatal to give way to sleep at such altitudes. They seemed to fear that their companion would succumb to sunstroke, and one of these hardy mountaineers greatly amused de Saussure by declaring that if ever he ventured up again he would carry only a parasol and a bottle of smelling-salts!

"When I picture to myself," wrote the Professor, "this big and robust mountaineer scaling the snows, holding a little parasol in one hand and a bottle of smelling-salts in the other, nothing gives me a better idea of the difficulty of the undertaking and its impossibility to people who have neither the heads nor the limbs of a good Chamonix guide."

They returned with swollen lips and blistered skins, showing that the Chamonix guides of those days were unaccustomed to high elevations, as otherwise they would have prepared themselves to resist the effects of the sun, even in the snow fields; for often while the feet are nearly frozen the face is badly burned, necessitating the use of a cap drawn over the face or the application of burnt cork to the skin.

Later, in the same year, a Geneva artist named Bourrit, a great lover of mountain scenery, attempted the same route, camping out as the others had and starting up the glacier at daybreak. However, a cloud hovering around the summit soon scared his party out, and they bolted for Chamonix as fast as they could go. The next year Bourrit tried it again from another side of the mountain, by the glacier of Bionnassay, behind the great ridge or arm descending from the Dôme du Goûter; but the weather proved too cold and only two of his men reached the Bosses du Dromadaire, the two knobs or camel-like humps just beyond the Dôme du Goûter, the highest point probably so far gained; finally *they* came down like all the rest.

THE BUILDING OF THE FIRST HUT

De Saussure heard of the new route and had a hut built far up on the Bionnassay side in order to make the start from a higher level. In September of 1785 he made the attempt himself, but the lateness of the season made the ascent impossible. Doubtless his presence on the mountain stimulated the guides to fresh endeavors to win the prize offered a quarter of a century before.

The Geneva scientist had a second hut built, still higher up, for he was convinced that the summit could only be reached from this side, as crossing the ice fields of the "junction" above the Montagne de la Côte seemed to him impracticable. Not all the Chamonix guides, however, were of this opinion, some still clinging to the old route.

So the two factions got to betting on the respective merits of the two routes, until it was finally arranged that one party should try the old route and the other the new one and see which would first arrive below the summit. The start was made June 30, 1786, there being three guides in each party. The three ascending by the Montagne de la Côte arrived at the ridge just beyond the Dôme du Goûter long before the party coming up from the west. They attempted to go higher by the ridge of the "Bosses," but this route proved to be so precarious—being flanked on each side by precipices—that even these practiced mountaineers gave it up; indeed, the ascent by this ridge would be impossible without the use of the ice-axe, with which the Chamonix guides were not yet familiar.

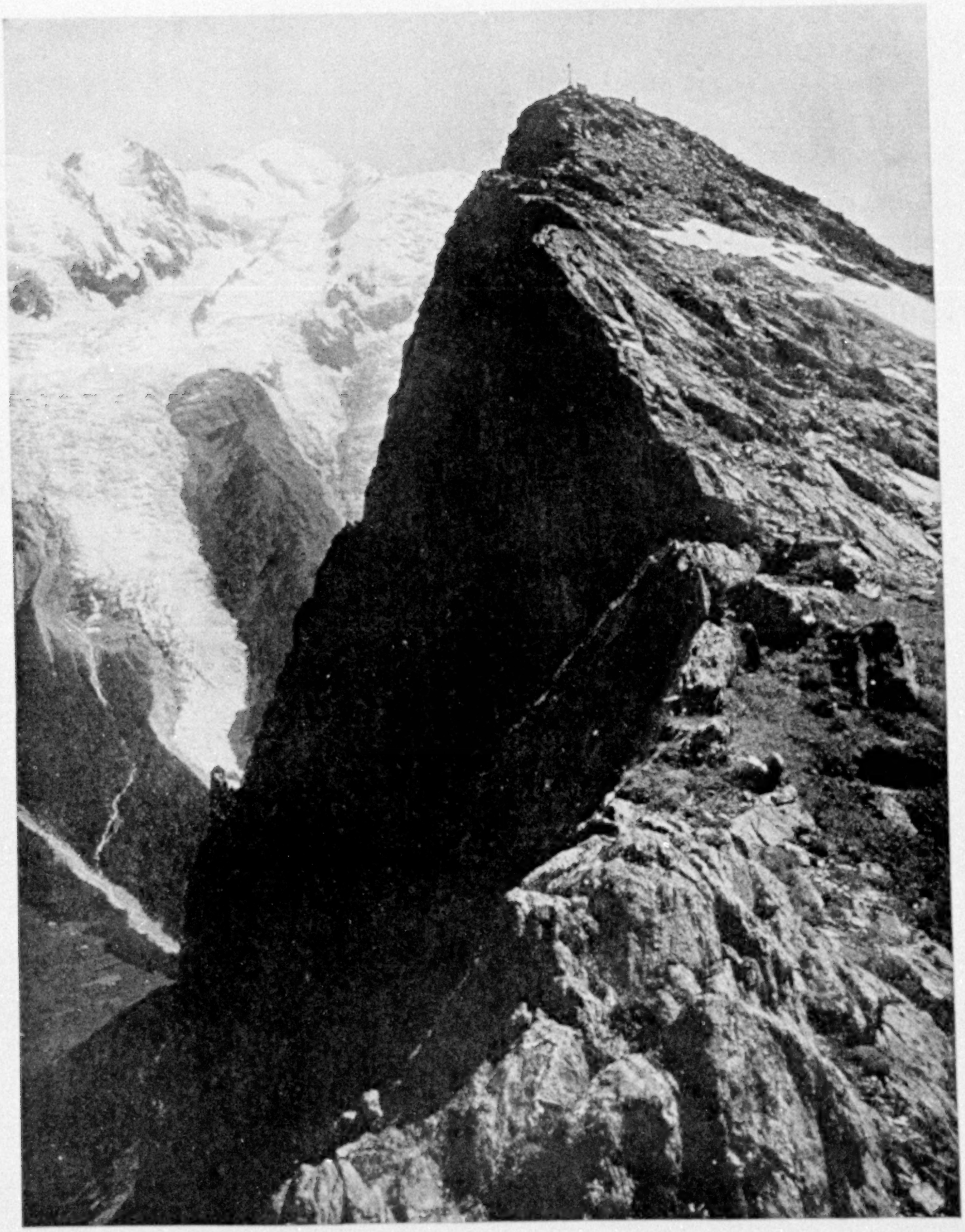


Photo by S. G. Wehrli

MONT BLANC AND THE SUMMIT OF BRÉVENT

Brévent is a gaunt peak, 8,284 feet high, lying on the western side of the Chamonix Valley, on the opposite side of which Mont Blanc rises in all its splendor

XUM

Photo by Donald McLeish

THE TREMENDOUS GLACIERS OF MONT BLANC

A view from Brévent on the opposite side of the Chamonix Valley. "Mont Blanc, from its peculiar formation, is almost wholly buried in its upper reaches in snow and glacier, so that crevasses and avalanches and all the other dangers peculiar to snow-climbing are a constant menace to the climber. The extreme cold and rarity of the air as you approach the summit are also serious obstacles" (see page 879).

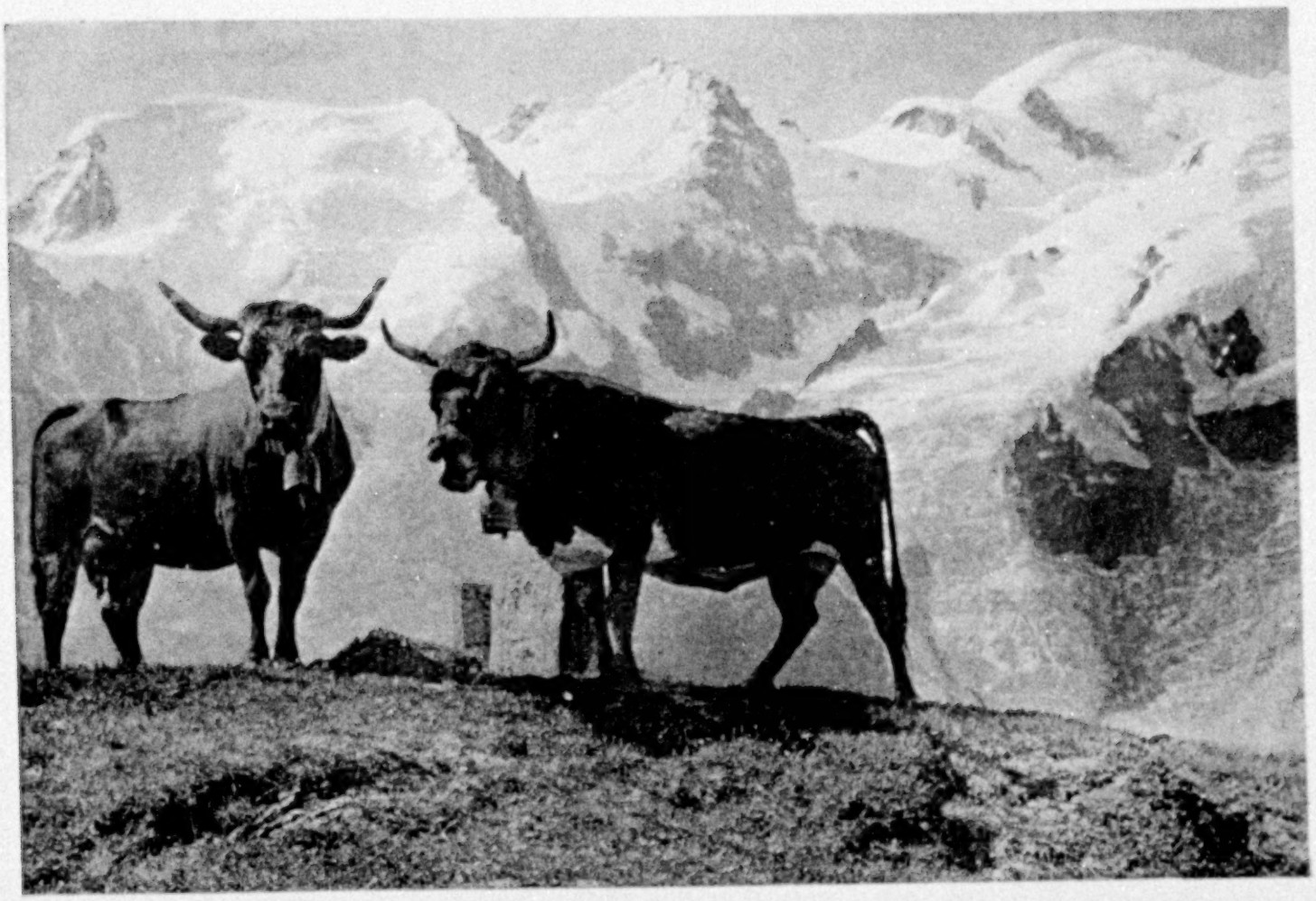


Photo by G. R. Ballance

CATTLE ON BRÉVENT

These hardy Swiss cattle ascend the mountains each year in the early summer to graze on the high mountain pastures, which are technically known as Alps

AN UNWELCOME GUEST

With this party was a fourth man, a youth of 24, named Jacques Balmat, who seems to have attached himself to the others against their wishes. Just before the start for the summit, Balmat had spent two days alone on the Dôme du Goûter looking for routes, and was returning when he met the other three on their way up.

He was an unwelcome member of the little party, for he wished to win the reward and so did they. However, he would not be shaken off. When the others gave up the attempt, he stayed behind to look about further, the others perhaps having deserted him purposely.

"I found myself," said he, "alone, and was divided between a wish to rejoin them and an ambition to attempt the ascent alone. I was piqued at being left behind, and something told me that this time I should succeed." He gave up the idea of proceeding by the ridge of the "Bosses," and so descended a little to what is known as the "Grand Plateau," crossed it and ascended again on the other side over an icy path along the crest of the rocks called the "Rochers Rouges," on the armlike ridge of the mountain opposite. This route, now known as the "Ancien Passage," has long since been abandoned, owing to its danger.

BALMAT'S HEROIC FEAT

Balmat had to dig steps in the ice with the end of his stock, and finally, after incredible toil, he saw his way clear to the very top, for the "Rochers Rouges" are less than 1,000 feet from the summit. But night was approaching and clouds had begun to form around the summit, and besides he thought no one would believe his story if he did reach the summit, so he decided to retrace his steps.

XUM

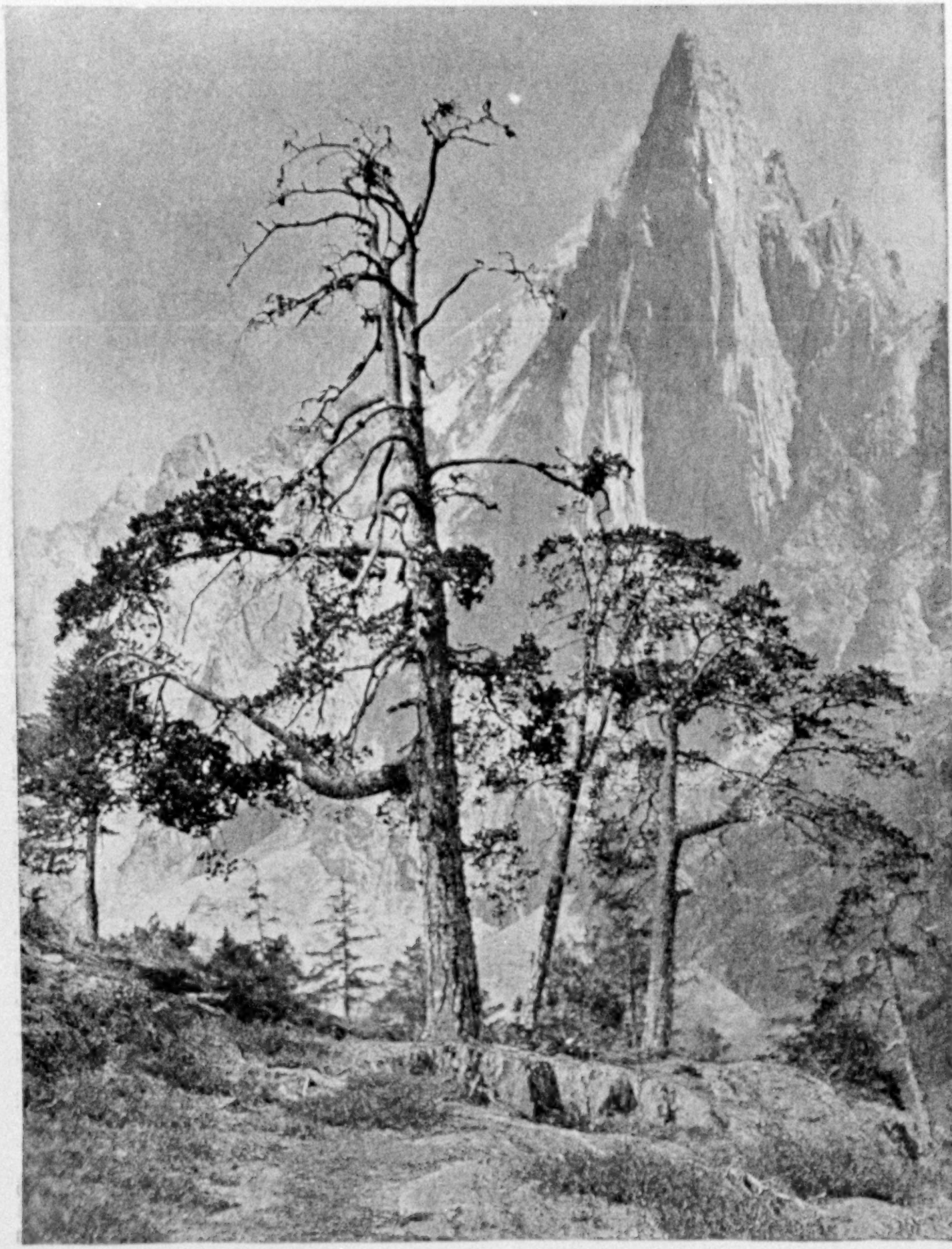


Photo by G. R. Ballance

THE AIGUILLE DU DRU

This wonderful needle-like summit, the Aiguille du Dru (12,320 feet), forms one of the points in that marvelous series of mountains surrounding Mont Blanc. It is this group of peaks which gives to Mont Blanc a charm felt even by those in whom the mountaineering spirit has never developed. Many such are found in the little town of Chamonix, who never attempt to climb the mountains, but are content to watch the never-ending play of light upon the rocks and snow-clad peaks. The moonlight and sunrise effects upon the mountains have an indescribable fascination which draws to Chamonix all sorts and conditions of men.

When he had again reached the Grand Plateau, he found he was completely snow-blind. So he sat with his eyes closed for a half hour, until his sight returned; but now it was growing dark and he could not find the snow bridge over the huge crevasse which he and his friends had crossed early that morning. There was nothing to do but pass the night where he was.

Burrowing a hole in the snow, he kept himself as warm as he could, with the genial lights of Chamonix in full view far below him, where doubtless his companions were cosily seated around their fires or already tucked away in their warm beds. It seems incredible he could have survived the cold and exposure, and indeed only the most favorable weather conditions could have made it possible.

To think of this poor peasant guide, alone and unprotected, at this altitude—it was certainly two and a half miles above sea-level—fighting the numbing cold all the weary hours of that awful night and living to return to his home next day, makes his surprising feat all the more wonderful. To have ascended almost to the top of the loftiest peak in Europe, alone and with no other help than what a simple alpenstock could afford, and after two days of exposure to cold and rarefied air, is incredible enough. If he had not been endowed with an iron constitution and determination, he never could have performed such a feat and have survived. His fatigue was so great on arriving in Chamonix that he slept 24 hours without waking; but he could fall asleep with the proud consciousness that he alone knew the way up the giant peak, and that soon the reward would be his! Now he could laugh at his envious companions, who had so heartlessly abandoned him.

THE FIRST SUCCESSFUL ASCENT

He kept his secret even from his wife, and finally only divulged it to the village doctor, a man named Paccard, whom he heard was thinking of making the attempt to ascend the mountain. Though he might be (and as the sequel showed, he was) of little service as a companion, still Balmat wanted a witness, so the two determined to make the attempt.

Three weeks of bad weather delayed the project, but finally, on August 8, 1786, they started late in the afternoon, one taking the right and the other the left bank of the Arve, lest any one should learn of their intention, and rejoined each other at the top of the Montagne de la Côte, where they encamped about 5,500 feet above Chamonix. At half past one in the morning they were under way again, slowly making their way over the glacier and snow to the Grand Plateau.

The wind rose higher and higher, but undaunted the two worked their way over the same steep path that Balmat had traversed alone three weeks before. Gradually they mounted to the group of rocks called the "Petits Mulets," only 350 feet below the summit, and 600 feet above the "Rochers Rouges," where Balmat had arrived before.

Here they were assailed by such a squall of wind that for ten minutes they had to lie flat on the ice in order not to be blown off. The poor doctor became disheartened and would only proceed on all fours to a point whence the village could be seen far below.

With their glass they could see a crowd of people watching them through a telescope from the village street. Considerations of self-respect induced the poor half-frozen doctor to get on his legs, but he was too exhausted to go further. So Balmat made the last part of the ascent alone, himself suffering terribly from the freezing cold and the rarefied air.

THE SUMMIT CONQUEROR

Finally, about six o'clock in the evening, he stood where no man had ever stood before, at an altitude of nearly 16,000 feet. Waving his hat on the end of his stock, he saw he was answered from below, and soon he descended to where he had left the unfortunate doctor. He found him seated, motionless and almost asleep, but forced him to get up and try to walk. Finally, by main force, by pulling and pushing, he brought him also to the summit.

XUM

Photo by S. G. Wehrli

MONT BLANC DU TACUL AND THE GLACIER DU GÉANT

One of the subordinate peaks of Mont Blanc is known as Mont Blanc du Tacul. It stands in a mass of ice and snow at the head of the great Glacier du Géant, which merges into the Mer de Glace

Soon they descended, the doctor almost as helpless as a child, and towards midnight arrived at their former camp on the Montagne de la Côte, where they passed the night, suffering intensely from frost-bite. Next morning the wretched doctor was completely blind and had to make his entry into Chamonix hanging to the strap of his guide's knapsack! Balmat was himself almost unrecognizable, with his "red eyes and blue ears." But with all the pain he suffered, he could enter Chamonix with a proud step, for he had conquered where so many had failed.

The poor peasant guide now became known far beyond the limits of his native valley, even receiving a patent of nobility from the King of Sardinia, and he was henceforward known as "Balmat, dit Mont Blanc."

De Saussure soon learned of his success, and the next year, guided by Balmat and accompanied by 17 other guides and a servant, with a great quantity of physical apparatus, he made the ascent. Later he ascended the Col du Géant, a lofty pass in the range, and had two engravings made which show the manner in which he made his mountain ascents.

In the one showing his party descending, they are all wandering about like sheep; no rope is visible, each person helping himself with his alpenstock as best he may, and each, it may be remarked, using the stock wrongly, placing it before rather than behind him, on which to lean his weight, de Saussure himself seeming to be on the point of harpooning his own foot!

AN EXTRAORDINARY MOUNTAINEERING COSTUME

The Professor is dressed in a long-tailed silk coat with huge buttons—the very coat is said to be preserved in the ancestral mansion at Genthod, near Geneva—and he looks much more as if he were ready for an afternoon promenade than a climb on the ice fields of Mont Blanc. One of the party is carrying a ladder for crossing crevasses, a custom now for the most part given up.

Thus at length the mountain monarch was fairly conquered, and from this time on his neck may be said to have been bent beneath the yoke of man. But in the succeeding quarter century there were but a half dozen other ascents. Until 1819 the only variation on Balmat's route was at the beginning of the route, the Montagne de la Côte being given up for the route to the left of the glacier "des Bossons" by the Pierre à l'Échelle. In 1827 the so-called "corridor" route from the Grand Plateau was discovered by Sir Charles Fellowes, and since then the upper route by the "Ancien Passage" has been abandoned. In 1859 the route over the ridge of the "Bosses," which had proven too much for Balmat's companions, was found practicable, and is now even more popular than the "corridor" route. Still another route from St. Gervais—further to the south of Chamonix, in the valley—up over the Aiguille and Dôme du Goûter and the ridge of the "Bosses," has been coming into favor; and, besides these three routes on the French side, there are five others from Courmayeur, on the Italian side, though little used.

Many things have increased Chamonix's fame since de Saussure's day. In 1832 Alexandre Dumas visited the village and gave great publicity to it by the chapters in his "Impressions du Voyage," wherein he described his famous interview with the then aged Balmat. In 1842 Professor Forbes carried on his extensive studies relative to the movements of glaciers, establishing the fame of the great glacier, the Mer de Glace.

But it was the popular lectures given all over England by Albert Smith, and illustrated by dioramic views of his ascent of Mont Blanc, in 1851, which especially spread the fame of the mountain. As a result of these lectures, there were 64 ascents in the six years following 1851, whereas there had been only 57 in the preceding 64 years.

THE AIGUILLES MORE DIFFICULT THAN THE MOUNTAIN

And since 1851 not a summer has passed without at least one ascent being accomplished. The other peaks in the range have also gradually been vanquished one by one. The last to surrender

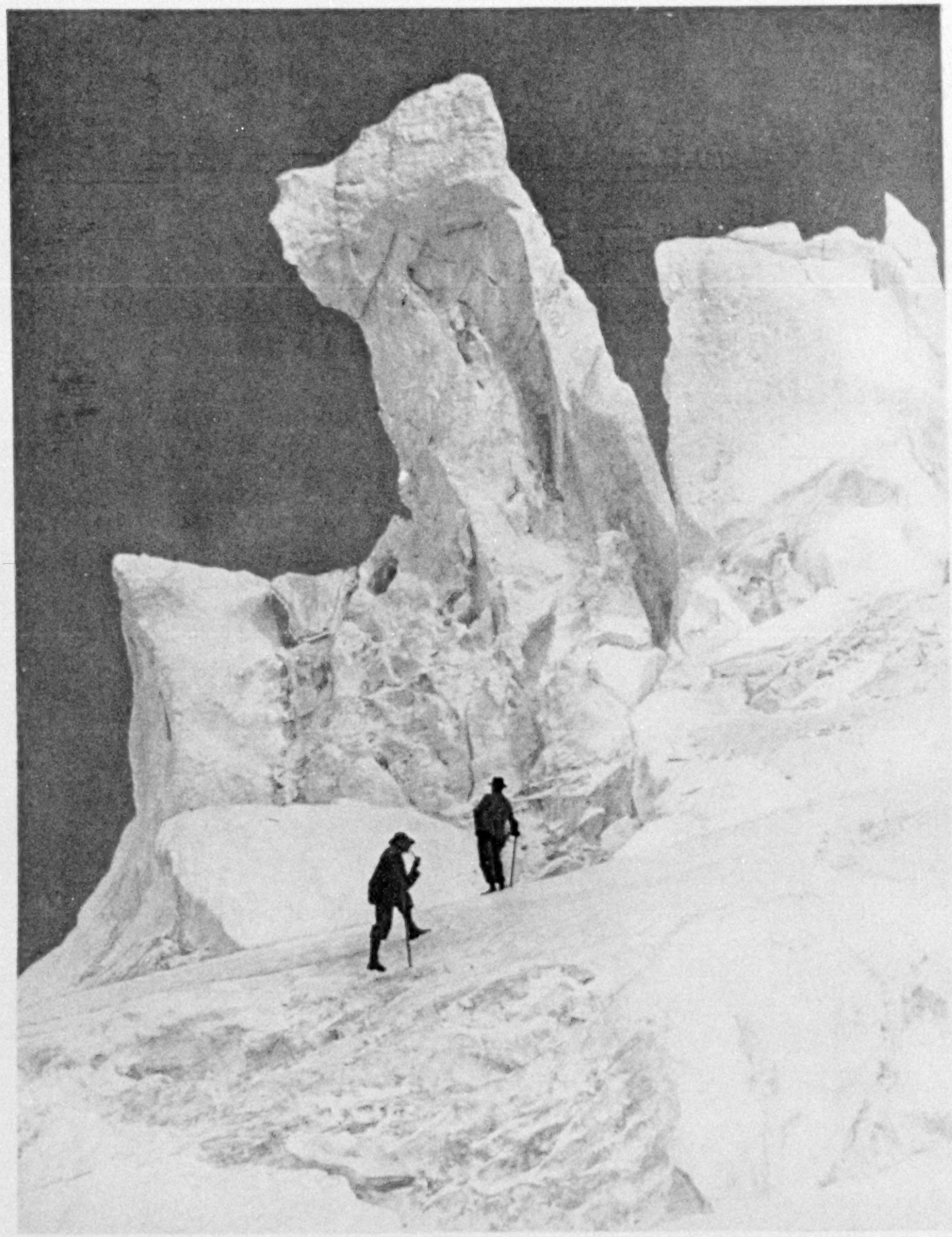


Photo by S. G. Wehrli

SERACS ON THE GLACIER DES BOSSONS

These great ice masses add to the picturesqueness and charm of mountain climbing, and also to its danger. An "ice-fall" is one of the things a good guide most seeks to avoid, especially at or just after the greatest heat of the day, which is the critical time.

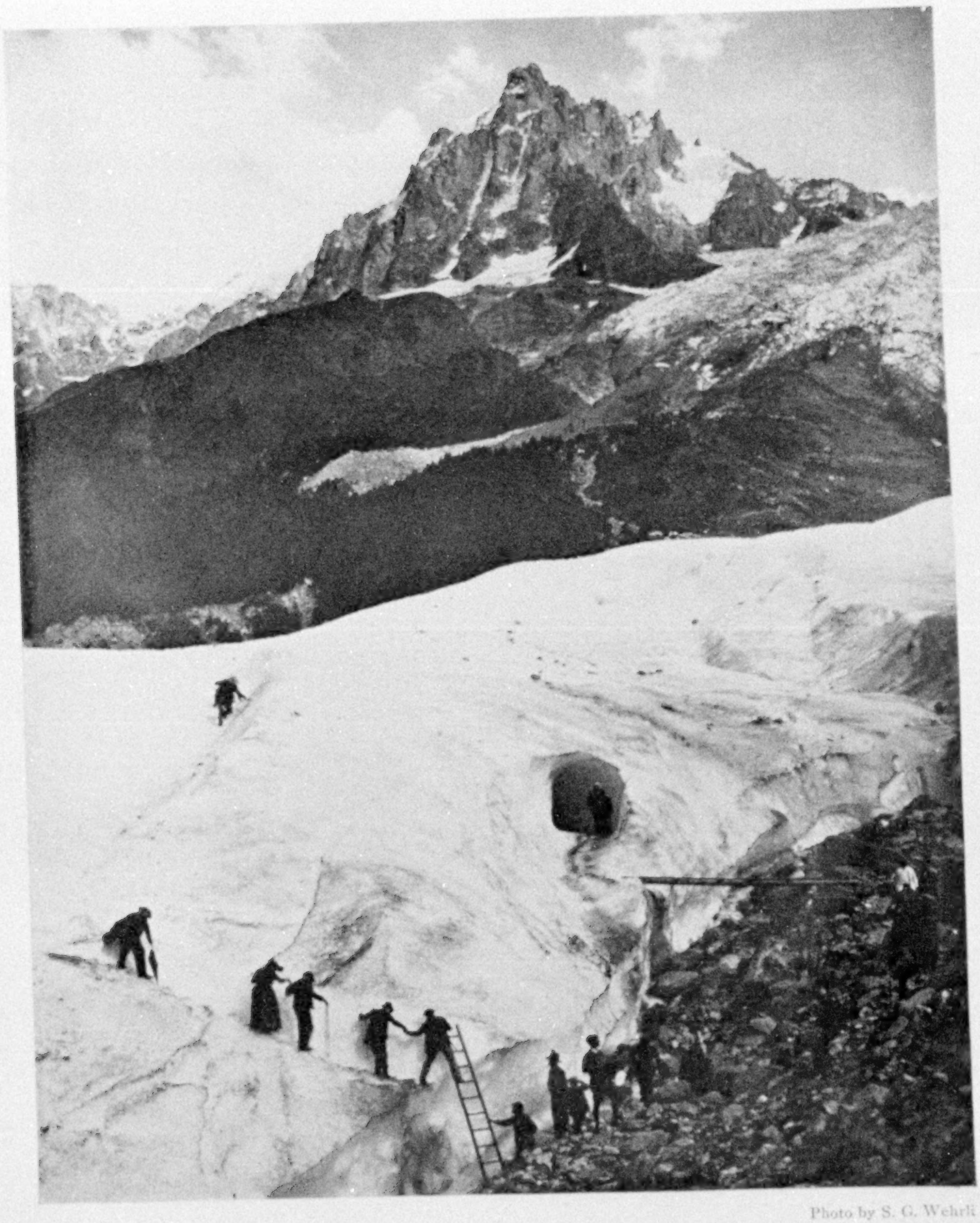


Photo by S. G. Wehrli

TOURISTS ON THE GLACIER DES BOSSONS

The visit to the Glacier des Bossons is the easiest of all excursions from Chamonix; so almost every tourist makes it. An electric railway takes him within a few yards of the glacier, and a grotto is dug into it for his benefit, so that he may enjoy to the full the beautiful color and purity of the ice. Above the glacier rises the sharp peak of the Aiguille du Midi.

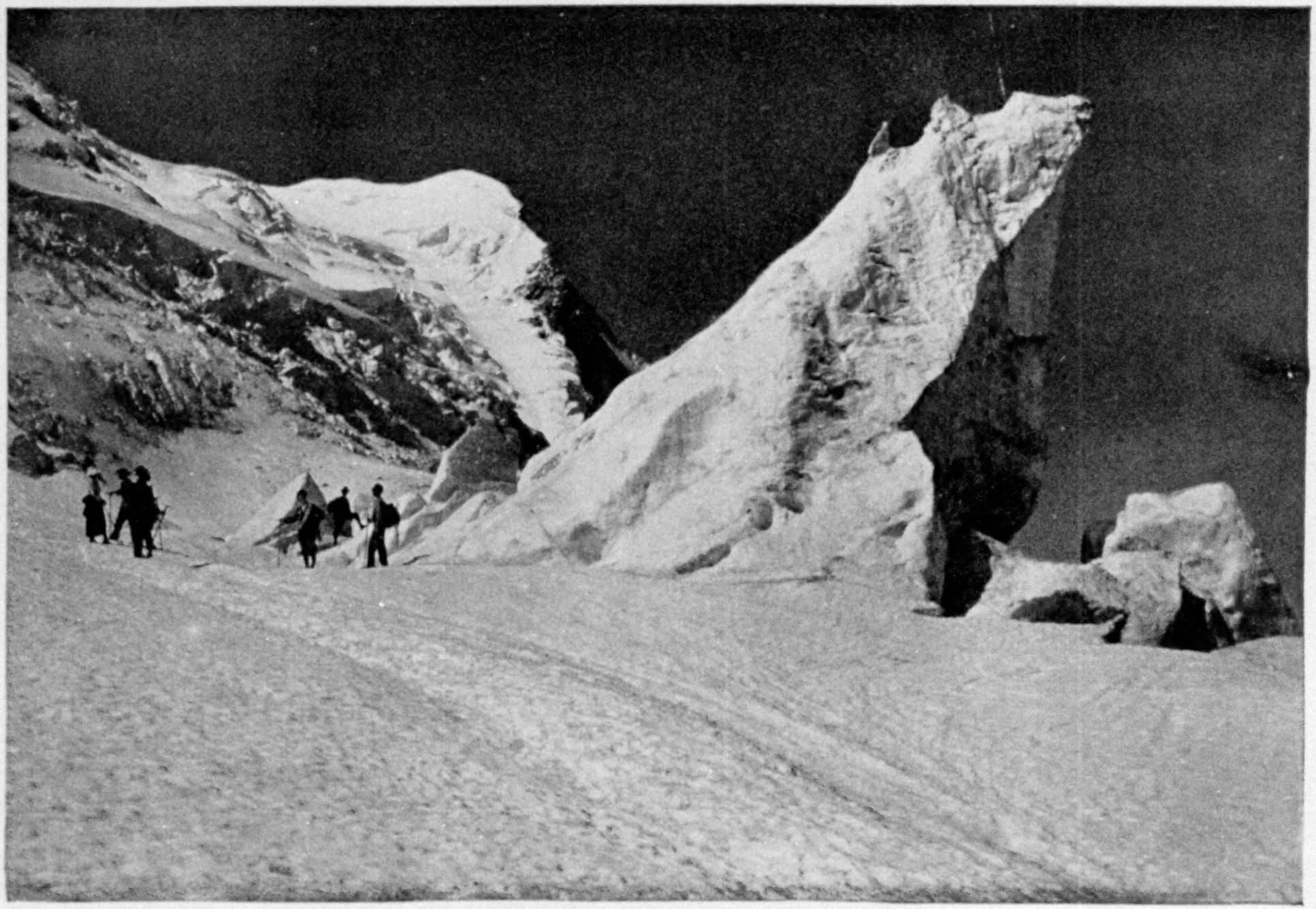


Photo by S. G. Wehrli

AMONG THE SERACS OF THE JUNCTION

"Amid the broken ice of the Junction are many lofty and frequently overhanging pinnacles of ice, known as *seracs*. To ascend these needles is a very dangerous pastime, as they not infrequently topple over, and in passing them one keeps as far away from their bases as possible" (see page 880).

were the Aiguille du Dru, in 1878 (see picture, page 872); the Aiguille du Géant, in 1882, and the Blanche de Peuteret, in 1885. Although some of these needle-like rocks are far more hazardous to scale than Mont Blanc itself, still none of them rivals the main peak in interest; and, as time goes on, its fame increases and each summer greater numbers make the ascent, attracted either by the grand scenery, the interest of its past history, or by pure adventure, as it is the highest mountain peak in Europe (if we except certain peaks in the Caucasus), being only 58 feet less than three miles high. Down to the close of the season of 1906 there had been 2,176 different ascents recorded at the Bureau of Guides. The summit has been reached even in winter.

Although the ascent of Mont Blanc offers no greater dangers than that of some other Swiss mountains, it has the name of being the longest and most exhausting climb in the Alps. While such peaks as the Matterhorn and the Chamonix Aiguilles are so formed that no great quantities of snow can cling to their sides, and consequently present for the most part merely dangers incident to rock-climbing, Mont Blanc, from its peculiar formation, is almost wholly buried in its upper reaches in snow and glacier, so that crevasses and avalanches and all the other dangers peculiar to snow-climbing are a constant menace to the climber. The extreme cold and rarity of the air as you approach the summit are also serious obstacles.

HOW TO ASCEND THE MOUNTAIN

But with good guides and proper precautions, with a good pair of legs and good lung power, the ascent will not be unduly difficult. Before undertaking any of the higher peaks of Switzerland, it is well to have got oneself into training by walking over some of the passes and climbing some of the lesser summits, for it often happens that he who feels himself strong and starts this excursion by walking out of Chamonix with head erect and firm step, ends by having to be pulled up the final slopes.

Our first care, in arriving in Chamonix, one day in July, was to go to the Bureau of Guides and secure the services of a good guide and porter. A porter is simply a guide in the making, generally a younger man, who has attached himself to some guide, and who later on, after he has made a certain number of ascents, will be enrolled as a guide himself and receive the same compensation.

Then we set about procuring the necessary equipment for the two days' journey, such as ice-axes, hobnailed boots, woolen leggings and gloves, mountain caps which cover the face and protect it from blistering, dark glasses with wire sides to protect the eyes completely from the glare of the sun, and a goodly supply of provisions—for you would be surprised at an Alpine appetite. The guide himself brings a long coil of rope, about 100 feet in length, slung over his shoulder.

Our party left the quiet little village about seven o'clock in the morning. As an ascent of the main peak is not yet a very common undertaking in Chamonix, a few people were before the hotel to see us off. We followed the left bank of the Arve for some distance and then ascended by a zigzag path through the pine forest at the base of the mountain.

A RESTAURANT 7,000 FEET UP THE MOUNTAIN SIDE

Soon the larch and pine trees become thinner and are succeeded by meadows, far above which appears the imposing Aiguille du Midi, at the extremity of the great arm or ridge descending from the right shoulder of the mountain. Just beneath its base, and high up on a huge granite cliff overlooking the glacier of the "Bossons," is the shabby little chalet restaurant of Pierre Pointue, 6,723 feet above the sea, where, after our two hours' climb, we stop and rest and enjoy an unrivalled view of the Valley of Chamonix and the Brévent, the mountain directly opposite.

Now the main buttress, along the crest of which our way has so far lain, is abandoned, because the huge glacier of the Pelerins shoots down across it from the heights of the Aiguille du Midi; we therefore turn our course toward the icy stream that has now for some time been

seen glittering far below in the ravine at our right.

To reach the ice we follow a narrow, slippery goat-path, hollowed out in the almost perpendicular face of the cliff, our left shoulders rubbing the rock, while our right feet are on the edge of the precipice, which dips sheer to the glacier hundreds of feet below. Soon we stand on a mound of broken granite fragments mixed with gravel and ice, a lateral moraine, and work our way over this broken and rugged causeway, skirting the bases of the needle-like rocks, the Aiguilles du Midi, du Plan, and de Blaiterie, this part of the route being known as the Plan des Aiguilles. We arrive just beneath the Aiguille du Midi, where we reach another huge granite cliff, called the Pierre à l'Echelle, or Ladderstone, perhaps so named because the descent from it to the ice is here made generally with the use of a ladder.

DANGER FROM AVALANCHES

Constant avalanches of stones rolling down from the neighboring Aiguille du Midi make this part of the route dangerous. When the stones came down, often no larger than cannon balls and rushing with similar velocity, we would take refuge by crouching down beneath some projecting boulder.

At length we are on the glacier of the "Bossons." A wide waste of snow and ice stretching continuously upward, with an apparently easy slope, lies before us. At a distance of two miles, perhaps, are visible two isolated pinnacles of rock rising above the monotonous white waste. These rocks we watch with interest, for they are the "Grands Mulets," upon which is the tiny chalet where we are to spend the night (see page 882).

But the frozen slope before us is not as smooth and level as it seems at this distance, for we soon find ourselves in the midst of fearful, irregular forms of jagged ice walls, yawning chasms hundreds of feet deep, huge masses of half consolidated snow, the remnants of older avalanches launched long since from above, and everything mingled in the utmost confusion (see pages 876 and 877).

To cross this irregular mass is most laborious; in bad weather there have been occasions when even expert guides were unable to cross. In 1870, for instance, when a party of 11 perished near the summit, the rescue-party was detained at Pierre à l'Echelle several days. The first part of the distance is easy enough, lying merely over broken and fissured ice. But as we approach what is called the "Junction," where the two ice-streams, the glaciers of the "Bossons" (which we have just been traversing), and Taconnaz join, just above the buttress of rock known as the Montagne de la Côte, which causes them to divide again, the ice is fearfully upheaved, and frequently the use of the ice-axe is needed; hence progress is most tedious and the party is roped together to avoid falling into hidden crevasses.

Amid the broken ice of the Junction are many lofty and frequently overhanging pinnacles of ice, known as seracs (see page 878). To ascend these needles is a very dangerous pastime, as they not infrequently topple over, and in passing them one keeps as far away from their bases as possible. Huge masses of rock are constantly rolling down upon the ice or into the open crevasses from the heights above.

FREAKS OF ALPINE NATURE

These rocks often cause the ice below them to assume most fantastic shapes. As the surface of the ice gradually melts away, perhaps a foot in a week, these huge stones keep the sun's rays from the ice beneath them; so gradually, as the constant erosion and carving go on, they become like huge granite tables supported by thin crystal stems, which grow longer and thinner day by day, until finally the weight above causes them to topple over.

But small bodies, such as leaves, have just the opposite effect, for they absorb the sun's heat and communicate it directly to the ice below, and so holes are hollowed out. Though tons of granite are rejected and hoisted up into the air on solid pillars of ice, little flimsy membranes, like leaves, wafted over the ice by the summer's breeze and weighing only a few grains, are sucked down into

Photo by G. P. Abraham

A CREVASSE ON THE WAY UP MONT BLANC

"The yawning chasms are generally crossed by snow bridges which have drifted across them. If the snow bridge is too frail to allow the weight of a man upright, one of the guides often lies down at full length—of course tied to the rest of the party—and manages to wriggle across, and then pulls the next one over laid flat on his back. . . . As a last resort, steps are hewn in the faces of the crevasse, down on one side and up the other, descending as far as necessary in order to cross the chasm easily" (see page 885).

XUM

Photo by S. G. Wehrli

THE ASCENT OF MONT BLANC: THE GRAND MULETS

Mont Blanc can be ascended from almost any point of the compass, but the route usually followed is from Chamonix past the jagged rocky peaks known as the Grand Mulets. The tiny chalet, where most climbers pass the night, can be seen in the foreground of the picture

the depths. Such are the freaks of Alpine nature!

Over such difficulties we slowly cross the glacier, tied together in single file, through fissures and up precipices, where only the trained eye of the guide could find a way. Soon the Junction is passed and the way over the glacier of Taconnaz is easier. After making a long detour and doubling back again, as the way is too steep to ascend directly, we finally, after four or five hours of toil on the ice fields, reach the Grand Mulets, the last few hundred feet being at an angle of 45° and most fatiguing, for it is now just after mid-day and the snow is very soft (see page 884).

We are now some 10,000 feet above the sea and nearly 7,000 above Chamonix. These rocks were early discovered and made use of as a resting place by the first explorers of the mountain. It is an island of rock projecting from the snow, perhaps 300 feet over the glacier in front, the terminal peak of the granite buttress, the Montagne de la Côte, here finally cropping out again after being concealed by the glacier stream. A tiny chalet has been built here, where the climber can spend the night sleeping in a good bed.

THE SUPERB VIEWS FROM THE MOUNTAIN

The view over the Valley of Chamonix, with its mountain walls, is indeed superb. Over the top of the Brévent can be seen the distant Jura range, and even the shores of the Lake of Geneva are visible. The great Aiguille du Midi, from whose base we have just come, rises on one side of us, and the towering Aiguille and Dôme du Goûter, in the direction of which we are to proceed on the early morrow, are on the other. Back of us is the beginning of the long snow slope extending to the summit (though the summit itself is invisible), which we are yet to laboriously climb.

The sunset from here that evening was marvelous and the still starlight impressive: everything so hushed, you fancy you can hear the very stillness—the sense of absolute repose so unlike anything you have ever experienced before—for at night the thousand rills of water, which trickle over the glacier in the daytime like the pulse of glacier life, are now stilled. Only now and again a low rushing murmur breaks on the ear, the far-off sound of some avalanche heard for a few seconds and then ending in a muffled crash.

The little chalet is leased by the commune of Chamonix to a man and his wife, a most woebegone couple, whose dejected looks eloquently bespeak the solitude of their lives amid these eternal snows, where the thermometer each night stands at zero. Triweekly two hardy porters alternate in bringing up supplies from Chamonix, and they certainly earn their few francs a day.

No wonder a glass of water costs 20 centimes, even if it be melted snow, for every billet of wood used as fuel to melt the snow has to be brought from Chamonix, seven hours below!

THE SECOND DAY'S CLIMB

At one the next morning we are called, and after a hasty breakfast we are again roped together and under way. Like the last five hours of yesterday's climb, the route now to the very summit is over snow. We descend to the glacier again and once more begin our conflict with the difficulties of the ice, slowly picking our way, with the help of a lantern, up the snow valley between the mighty arms of the mountain. A zigzag climb soon brings us up the steep bank to a tiny level plain known as the First Plateau; three hours later we reach another level space, the Petit Plateau, directly under the ridge connecting the Dôme and the Aiguille du Goûter on our right (see page 886). The sun is now well up and we have the promise of a glorious day.

The little plateau is fissured with crevasses and covered by the remnants of former avalanches—a spot particularly dreaded by the climber at mid-day, because of the avalanches of snow let loose from the overhanging cliffs by the warmth of the sun. Without warning, thousands of tons of billowy masses may pour down upon this tiny level space.

Indeed, the dangers of avalanches on Mont Blanc are far more subtle and far more to be dreaded than those of cre-

XUM

Photo by S. G. Wehrli

THE GRAND MULETS

In the Mont Blanc range are numerous Aiguilles—sharp, needle-like points like the Grand Mulets—many of them far more hazardous to scale than the great mountain itself. These peaks have gradually been vanquished one by one. The last to surrender were the Aiguille du Dru, in 1878; the Aiguille du Géant, in 1882, and the Blanche de Peuteret, in 1885.

vasses, for they descend upon the unsuspecting climber with appalling force and without a moment's warning. No adroitness on his part can parry this danger; neither rope nor ice-axe is of any avail. Only as recently as 1891 two members of an ascending party were buried here by an avalanche, five others at the same time being swept into a crevasse.

So we kept as far to the east of the plain as possible, and soon, after two more hours of hard climbing, we arrived at the entrance of the last or Grand Plateau (see page 896).

WHAT THE GRAND PLATEAU IS LIKE

Imagine an oval ravine, as it were, sloping very gently upward for about two miles to the base of a conical peak, the summit of the mountain, its sides being formed by lofty walls of snow-covered rock, its entrance guarded by two almost perpendicular walls, and its bottom full of snow that has fallen into it for ages from the summit at its upper end and the ridges at its sides, and you have some idea of what the Grand Plateau of Mont Blanc is like. It is the head of the long snow slope facing Chamonix and beginning just below the summit.

The frozen stream slips down this inclined groove, almost unbroken by crevasses, to its base between the two shoulders of the mountain, the Dôme du Goûter and Mont Blanc de Tacul. Here its motion is impeded by the foothills of the Dôme, and it slowly works its way over to the Tacul side, where it shoots like a terrific ice-cascade over the slope below, forming an unscalable precipice.

On the Dôme side, owing to a greater angle in the slope, the lower ice glides on, but the upper part is torn apart, forming a huge chasm or crevasse always to be found here. This "crevasse of the Dôme" extends quite across the entrance of the plateau; and, as at one end there is an impassable precipice and at the other the almost perpendicular wall of the Dôme, it is clear that the climber must cross the crevasse before he can mount higher.

Many accidents have therefore occurred here. It was just above this crevasse that Jacques Balmat had to remain all night, as in the darkness he could not find the snow bridge which traversed it. In 1864 a porter named Coutlet, while descending with a party, fell into this crevasse. Two intrepid fellow-guides were lowered by ropes to a distance of 90 feet; but, owing to the suffocating air, could descend no further. They lowered a bottle a hundred feet further, but without touching bottom, and so the body of their companion was never found. Of all the dangers on Mont Blanc, that of the crevasse is the commonest.

HOW CREVASSES ARE FORMED

These huge rents in the ice are caused by the pushing of the half rigid, inflexible ice along over uneven surfaces; the mass may be broken by passing over a projecting ridge far below, in consequence of the huge weight above. In the higher parts of the mountain, as in the Grand Plateau region, the glacier is composed of névé; that is, consolidated snow, not solid ice. It is opaque and stratified, and has a dull white luster, instead of being greenish and transparent and of crystalline texture, as in the lower parts of the mountain. Lacking in compactness, it breaks easily if subjected to violence, and thus forms crevasses. The chasms soon disappear, for their sides are crushed together when new obstacles are encountered in front; and, as the ice is ever moving, new fissures are constantly being formed there. Hence, the crevasses seem to be stationary, though the ice in which they are formed is never still. But experienced guides know, however, that these gigantic rifts are always in the same places, just as are the rocks and peaks.

Generally the crevasses have smooth, perpendicular walls, though often they are hollowed out into beautiful caverns filled with greenish light, let in through their translucent roofs. Often, too, they are adorned with column-like icicles extending to the floor, just like pillars artistically designed.

These yawning chasms are generally crossed by snow bridges which have drifted across them. If the snow bridge is too frail to allow the weight of a man

XUM

ON THE WAY UP MONT BLANC

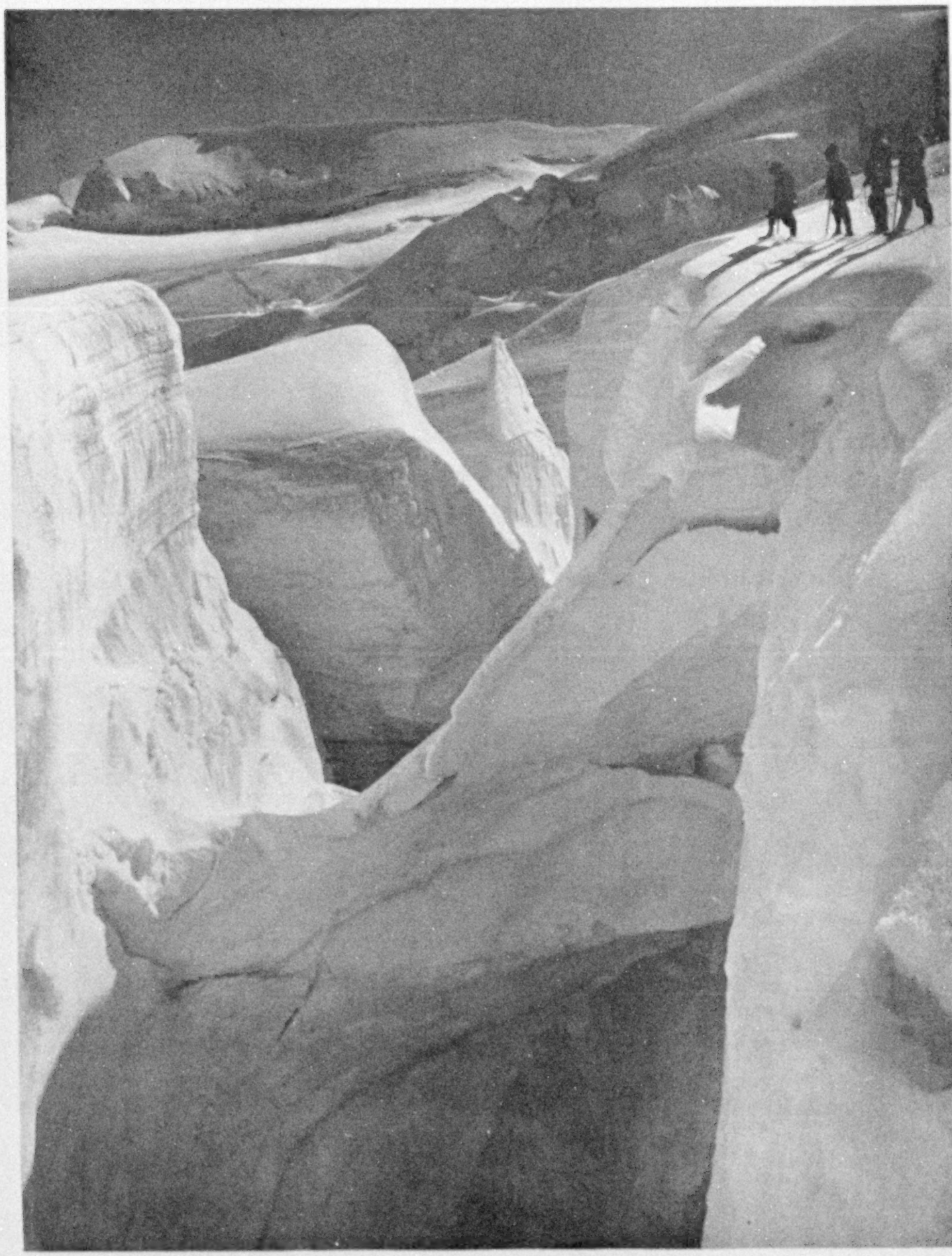
Next to Chamonix, the village of Bionassy, which lies some miles away, is the favorite starting point for an ascent. The route then passes the Aiguille du Gôuter and the Dome du Gôuter (11,210 feet), which are shown in this picture

XUM

Photo by S. G. Wehrli

CROSSING A CREVASSE

"In 1864 a porter named Coutlet, while descending with a party, fell into a crevasse. Two intrepid fellow-guides were lowered by ropes to a distance of 90 feet; but, owing to the suffocating air, could descend no further. They lowered a bottle a hundred feet further, but without touching bottom; and so the body of their companion was never found. Of all the dangers on Mont Blanc, that of the crevasse is the commonest" (see page 885).



A CREVASSÉ AND SNOW BRIDGE

"In the higher parts of the mountain, as in the Grand Plateau region, the glacier is composed of névé—that is, consolidated snow, not solid ice. It is opaque and stratified and has a dull white luster, instead of being greenish and transparent and of crystalline texture, as in the lower part of the mountain. Lacking in compactness, it breaks easily if subjected to violence, and thus forms crevasses" (see page 885).

upright, one of the guides often lies down at full length—of course tied to the rest of the party—and manages to wriggle across, and then pulls the next one over laid flat on his back. Sometimes ladders are used, but of late years it is seldom that a cumbersome ladder is carried. Sometimes by making a long detour a way across is finally found. As a last resort, steps are hewn in the faces of the crevasse, down on one side and up the other, descending as far as necessary in order to cross the chasm easily (see page 881).

TRAGEDIES OF THE CREVASSES

Perhaps some of you have read that weird tale entitled "Mrs. Knollys," by Mr. F. J. Stimson; how a young bride lost her husband in a crevasse on a Swiss glacier, and how, 40 years later, the then gray-haired lady returned to the scene of her grief, and, the requisite time for the movement of the glacier having elapsed, greeted the body of her husband, still in the same flush of youth as on the day of his disappearance, at the base of the glacier.

This story, seemingly so fantastic, has a basis of scientific truth in it, for there are many instances of bodies, which have been lost in crevasses, appearing again years later, for the glacier flows on irresistibly in a straight and steady course which no force can stem; whatever falls upon it moves with it, and whatever falls into the gaping mouths of its crevasses is carried down with it.

As an illustration of this movement, may be cited the terrible Hamel accident, in 1820, at the upper end of the Grand Plateau. After passing the last crevasse and starting up the slope of the "Ancien Passage," the snow beneath the party began to slip, all of them were hurled down in the suffocating mass to the edge of a huge crevasse, and three guides were swept into it.

In 1861, 41 years later, the dismembered remains of their bodies began to reappear at the lower end of the glacier of the "Bossons," more than four miles in a direct line from where the accident occurred. The bodies must have traveled downward at the rate of 500 feet per annum.

One of the surviving guides was still living when the remains of his old comrades were found. He remarked, "Who could have thought I should have shaken once more the hands of my brave comrade?"

Fragments of skulls, a forearm and hand, bits of a knapsack, a felt hat, tin lantern, shreds of clothing, and even a cooked leg of mutton, were among the various articles which first came to light, and a year later many other things were found.

In 1866 a Captain Arkwright and three others were also caught in an avalanche and hurled from the "Ancien Passage" into a crevasse at its base, on the Grand Plateau. The Captain's body was found in 1897 on the lower part of the glacier of the Bossons, miles away, and his watch and some other things appeared two years later.

MEASURING THE MOVEMENTS OF THE GLACIERS

The movements of these glaciers have been carefully studied by Professor Forbes, in 1832, and by Professor Tyndall, in 1857 and 1859. Forbes first proved that they were in perpetual motion. He watched holes, dug into various parts of the huge glacier known as the Mer de Glace, through a small telescope furnished with a graduated circle and planted on the glacier's rocky bank. He found these marks were carried downward faster when on the lower part of the glacier than on the upper, and faster in the middle of the stream than at the sides. He calculated the daily progress to be about 10 inches near the top, whereas it was about 25 near the bottom in the center and 16 at the sides.

In 1832 he discovered some fragments of wood in the ice, which were identified as pieces of a ladder which de Saussure had left at the upper end of the glacier in 1788 when descending the Col du Géant. So the ice had moved some 16,500 feet in 44 years, or about 375 feet per annum, somewhat slower than the glacier which starts from the Grand Plateau.

XUM

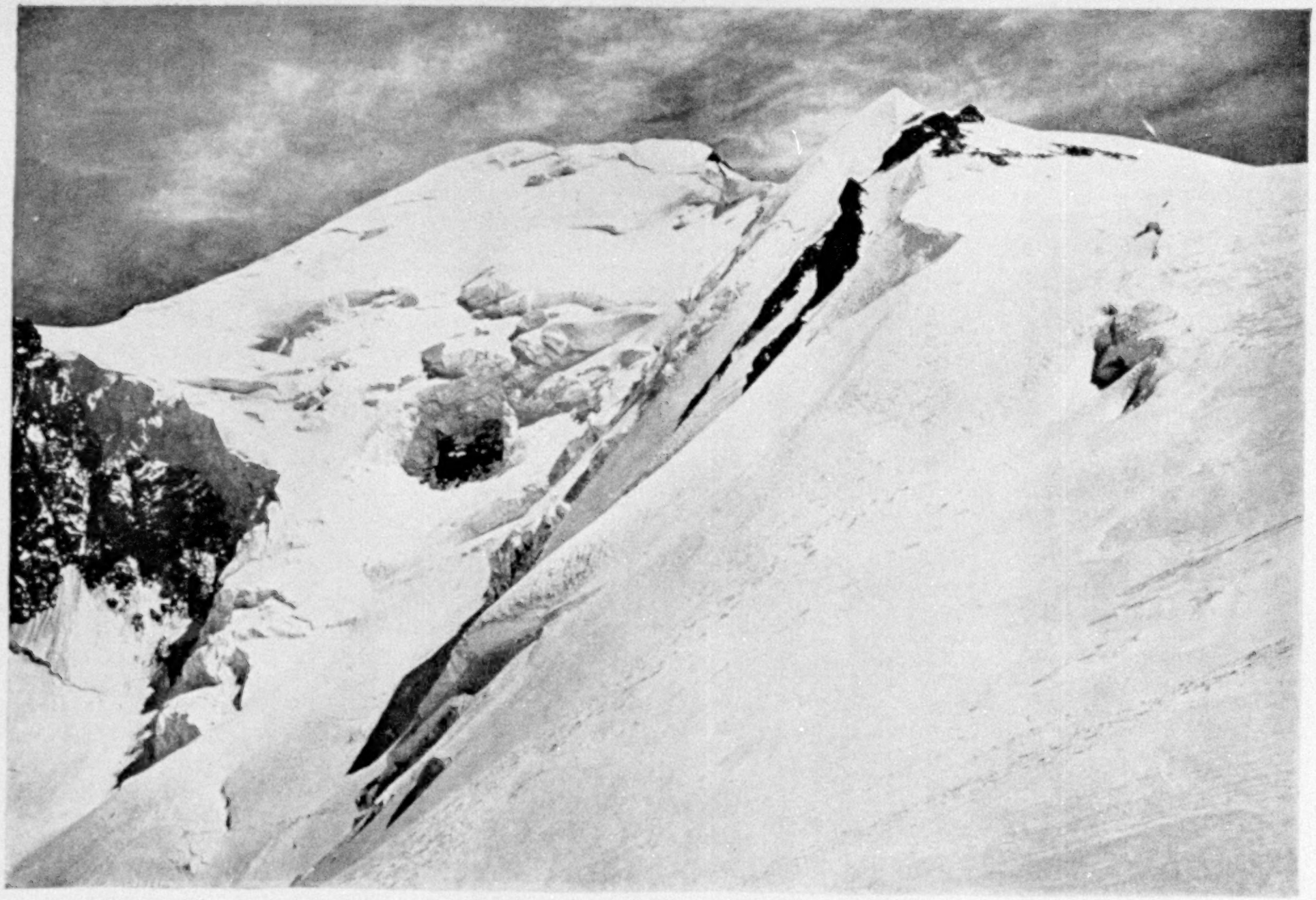


Photo by S. G. Wehrli

THE SUMMIT, SHOWING VALLOT'S CABIN

Just below the summit of Mont Blanc is Vallot's cabin, which can be seen as a square snow mass in the picture. "This little hut and observatory are 14,320 feet in the air. They were planned by Vallot, a French mountain enthusiast, who, in 1887, performed the unprecedented feat of camping out under canvas on the very summit of Mont Blanc for three days and nights" (see page 891).

But—after this digression—we are still at the entrance of the Grand Plateau. The snow bridge across the crevasse of the Dôme is easily found and crossed without any difficulty, as at this time in the morning—towards 7 o'clock—the sun had not yet softened the snow, and we finally stand on the last plateau. From here we have the choice of two routes to the summit, mounting the ridge on either side of this snow valley and proceeding along its crest to the top.

As the eye ranges upward along the plateau it falls upon a cluster of bare rocks protruding through the snow near the top of the valley to the left and just under the summit. These rocks are known as the "Rochers Rouges," and along the narrow path over their crest lies the route discovered by Balmat and followed by all the early climbers of the mountain. But the approach to these rocks over the loose masses of snow in the upper part of the valley was always considered the most dangerous part of the undertaking, for the least jar is often enough to precipitate an avalanche which will bury the climber or sweep him into a yawning crevasse.

In 1827 a new route, known as the "corridor," was found, by which the whole upper part of the plateau could be avoided. This route traverses the Grand Plateau for a short distance, then mounts to the top of the ridge by skirting the base of the lower Rochers Rouges, and thereafter follows this ridge all the way to the top, passing the upper end of the Rochers Rouges 14,794 feet high (where there is a tiny refuge-hut just where the old route, the "Ancien Passage," joins the new one), the Petits Rochers Rouges 250 feet higher, and the Petits Mulets only 350 feet below the summit.

THE WORST ACCIDENT IN THE HISTORY OF THE MOUNTAIN

At these last rocks there occurred, in 1870, the worst accident in the history of the mountain, wherein 11 persons lost their lives. The party had persevered in reaching the summit in awful weather, the wind blowing so frightfully that the swirling snow on the summit was even visible from Chamonix. They were just descending, and were seen at two o'clock near these rocks, and it was observed how often they had to throw themselves down to escape being blown off the slope. The top of the mountain was invisible for the next eight days.

As no one returned, a rescuing party of 14 guides finally started out, but could not even reach the Grand Mulets. A week later another party of 23 reached the summit, where the bodies of five of the unfortunate climbers were found frozen stiff in the snow.

A note-book found in the pocket of one, a Mr. Bean, of Tennessee, had the following entry of September 7:

"My dear Hessie: We have been on Mont Blanc for two days in a terrible storm. We have lost our way and are in a hole scooped out of the snow at a height of 15,000 feet. I have no hope of descending. . . . We have no food. My feet are already frozen and I am exhausted. I have only strength to write a few words." And, lower down, almost illegibly: "Morning. Intense cold. Much snow, which falls uninterruptedly; guides restless."

The five frozen bodies were drawn down the mountain in sacks, the six others never being found.

We, however, chose the other route from the Grand Plateau, the one which mounts to the ridge connecting the Dôme du Goûter with the central cone. Soon we reached the Rochers des Bosses and the Vallot Refuge, just below the summit of the Dôme (see pp. 890 and 892). This little hut and observatory are 14,320 feet in the air. They were planned by Vallot, a French mountain enthusiast, who, in 1887, performed the unprecedented feat of camping out under canvas on the very summit of Mont Blanc for three days and nights! I may mention the fact that Professor Tyndall, in 1859, had stayed one night on the summit, but his experiences with the cold and mountain-sickness were disagreeable.

Vallot's party could eat nothing those three days without the greatest distress, even a cup of tea producing disastrous effects.

On the third night they were caught

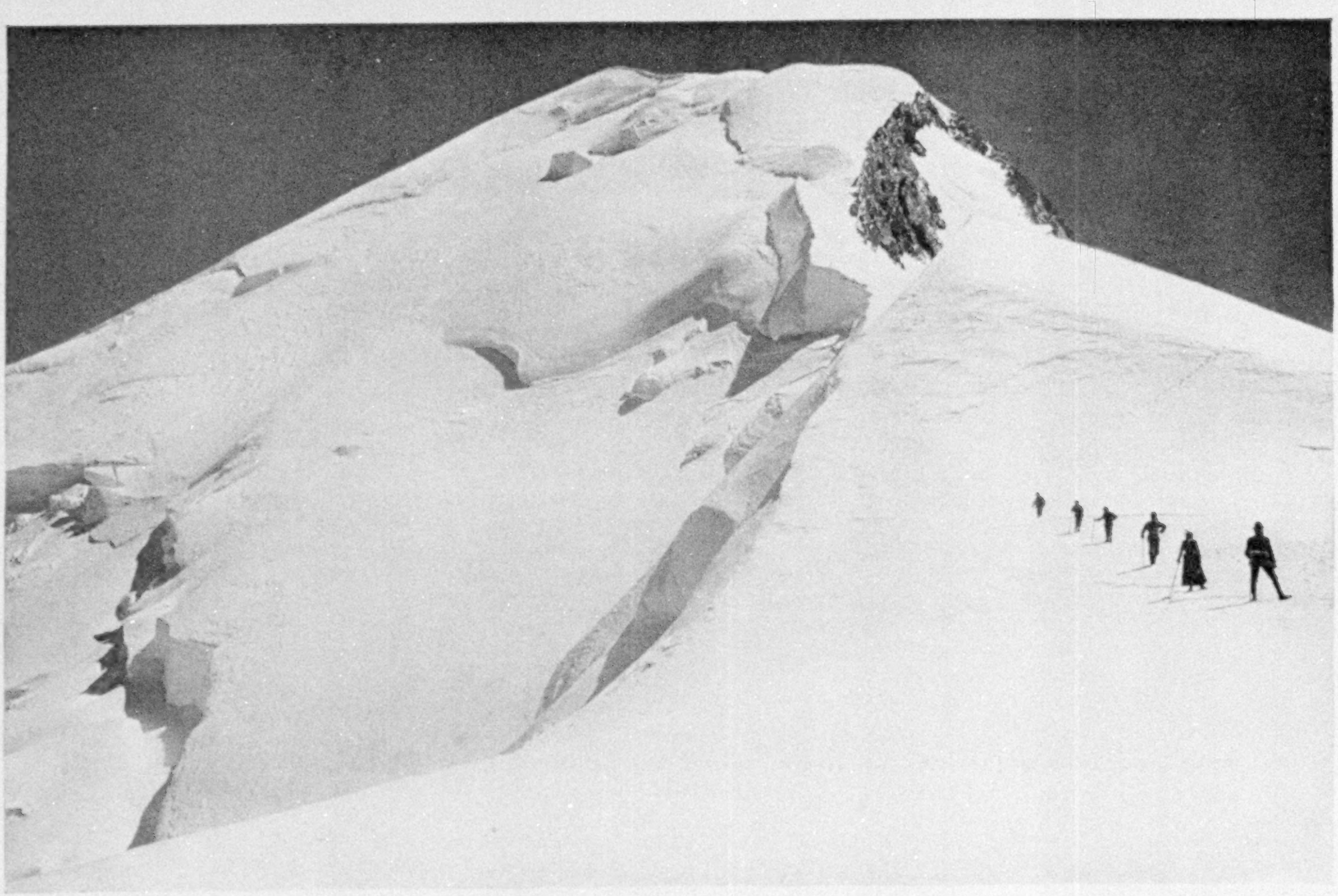


Photo by S. G. Wehrli

THE SUMMIT FROM THE DROMEDARY'S HUMPS

"Though the descent in general is not so slow or laborious as the ascent, in some places it is more hazardous. The descent to the Vallot Refuge was particularly disagreeable, as the ridge seemed far steeper as you looked down it than it did in climbing up. . . . The heat of the midday sun melts the surface crust on the slopes below, and our feet constantly sank into the porous substance at every step; so there was more danger of sticking fast and breaking our legs than of falling down precipices" (see text, page 868). The Vallot Refuge, snow-covered but distinct, can be seen just below the summit, to the left of the picture.

in an electric storm, which literally caused their hair to stand on end, and sparks were felt all over their bodies, which were bathed in electricity. This experience on the summit caused Vallot to think about erecting a refuge near the top.

The transportation of building materials to such a height offered the greatest difficulties. One hundred and ten guides and porters were engaged, each of whom carried 35 pounds. Since 1891 the hut has been enlarged and a separate building for an observatory erected.

Here we stop for a short rest. Our guides try to eat a few morsels, but they soon think better of it and give up the attempt.

THE DROMEDARY'S HUMPS

From the refuge the route follows the crest of the ridge all the way to the summit, passing over the two camel-like mounds known as the "Bosses du Dromadaire," whence the route is called that of the "Bosses." Though the distance seems trifling, two hours of painful effort were still before us.

The air has now become so rare that even the stoutest guide is compelled to take breath every few steps. If you ever saw an asthmatic man trying to walk up hill while a paroxysm was on him, you can form some idea of the difficulty of this last part of the ascent. The heart thumps irregularly, the pulse goes up to 100, your knees knock together, and your poor legs seem unwilling to carry you. Your throat is parched, you feel suffocated, your chest seems to be loaded down with a great weight, and such a feeling of utter exhaustion!

And withal it is extremely cold, somewhat below zero, and a fierce cutting wind sweeping up from the Italian side. As long as we rested we felt less inconvenience, but as soon as we were again in motion our legs seemed like lead and it was almost impossible to drag our bodies higher. Where the ridge crosses the Bosses it is in places exceedingly steep—in some places even 45°, where each step had to be hewn into the ice—and at times it narrows to less than a foot in width, so that it was a difficult matter to rest. As each in turn lay down for a few moments on the slope, the others had to stand and hold him in position.

And part of the time we felt like proceeding on all fours, or even bestriding the crest, for to look down the precipices on either side made us nervous.

A slip might be disastrous, for being roped together one might drag all the others down with him, and if you fell you would bound from snow-ledge to snow-ledge for perhaps 2,500 feet on the French side to the Grand Plateau, and still further on the Italian side, and you might not find time to decide into which country you would like to go.

SENSATIONS AT THE MOUNTAIN TOP

At last, two hours after leaving the Grand Plateau, we are on the summit. And what do you think is the first use made of the glorious view after all these hours of toil? Do you open your eyes wide in astonishment at the wonderful sight? By no means! You shut them as tight as you can and throw yourself down on the snow in utter weariness of mind and body, resenting the impertinence of your guides, who urge you to look about. But it is too cold to sleep, and soon you are up trying to keep warm.

The view, if you have any desire to see it, is indeed incomparable. The panorama before you is immense; but everything is on such a grand scale, great agglomerations of plains and mountains, that all details escape you. Most of Switzerland, great portions of France as far south as Lyons, and the plains of Piedmont and Lombardy, in Italy, are spread out before you (see page 897).

The enormous size of the giant among mountains, which you have just ascended, impresses you. The entire Bernese Oberland, with its countless lofty peaks, is below you. At the end of the long Pennine chain, on the western pinnacle of which you are standing, is the sister summit, Monte Rosa, the second highest in the Alps, and just to its left the unforgettable form of the Matterhorn, with mountains still over it in the distance, and nothing gives you a more

Photo by S. G. Wehrli

A GLISSADE

"We enjoyed the sport of glissading down these slopes, where there was no danger of crevasses. Each seated on the snow, with his ice-axe for a rudder, would glide in a few minutes down a declivity which took an hour to climb up. Frequently those behind would overtake those in front; and, as all were tied together, it was great sport to roll together in a jumbled mass of flying legs and snow" (see page 898).

convincing idea as to the height you are on. The many peaks and aiguilles of the Mont Blanc range perhaps interest you more, for they are the only near things in the view; but, however lofty and imposing they may have looked from below, even the highest is now insignificant, for all are beneath you.

Yet I confess I scarcely took more time to enjoy this unique vista than it has taken to write these few words of description, for the cold was so intense that five minutes after arriving at the summit we were all ready to begin the descent.

THE MOST EXTRAORDINARY OBSERVATORY EVER BUILT

And I should not fail to speak of the Janssen Observatory at the summit, the boldest monument ever erected to the glory of science, situated here at the apex of Europe (see page 897). Dr. Janssen, late president of the French Academy of Science, procured the necessary funds and superintended its erection. As the summit of Mont Blanc is entirely composed of a vast mass of snow and ice several hundred feet deep, resting upon a cluster of granite pinnacles (small groups of rock appear just below the summit on three sides, the nearest, la Tournette, being only 171 feet below it), the observatory would have to be built upon the snow, and so every one received his proposal with incredulity. Though the snow at the top is constantly subsiding and feeding the glaciers below, the height of the mountain remains almost constant from the accession of fresh deposits. So it was not feared that the observatory would sink *into* the snow, but *with* it. M. Eiffel, of the Tower fame, was consulted, and he agreed to engineer the project if a rock foundation could be found.

With incredible difficulty a horizontal tunnel was driven into the ice, 40 feet below the summit, for a distance of 96 feet, in quest of rock, but the only stone encountered was a solitary plumstone! M. Eiffel then gave up the plan, but Dr. Janssen carried the tunnel 75 feet further, but with no better success.

The report of the engineer in charge gives a lively idea of the difficulties involved in this work—how the workmen suffered from the cold and mountain sickness and mutinied, most of them refusing to work at any price.

HOW THE OBSERVATORY SANK IN THE SNOW

But the Doctor was still undismayed and went on with his original plan of erecting a building on the snow. In the winter of 1891-1892 the observatory was constructed, partly of wood and partly of iron, at Meudon, near Paris, taken to pieces and transported to Chamonix. At the end of September one-fourth of the material had been carried as far up as the Petits Rochers Rouges, only 750 feet below the summit, and the rest as far as the Grand Mulets. At the beginning of the next summer the part left near the summit was found to be buried in 25 feet of snow. By the end of the season the frail structure was up, though it was not completely finished till 1894. The heavier parts were slowly hauled up the final slope by the help of little hand windlasses.

That the apprehension as to its stability was only too well founded is now apparent. When I visited it the roof was was nearly level with the snow surface of the summit, so that we lay down upon it to rest. Only the ironwork tower was above the snows. The interior seemed almost completely filled with snow and the whole structure is in a dilapidated condition. I understand that the observatory has since been restored at great expense.

A huge instrument, called a meteorograph, costing $3,500, has been installed. It is wound up to run eight months, the period of time during which no one can visit the observatory, and it registers barometric pressure, maximum and minimum temperatures, force of the wind, etc. We now know how cold it may get at this great altitude: a temperature of 54.4 below zero (Fahrenheit) has been registered by the thermometer outside the observatory. However, it must get colder than that, for if I remember rightly, the thermometer on the top of the far lower summit of our

XUM

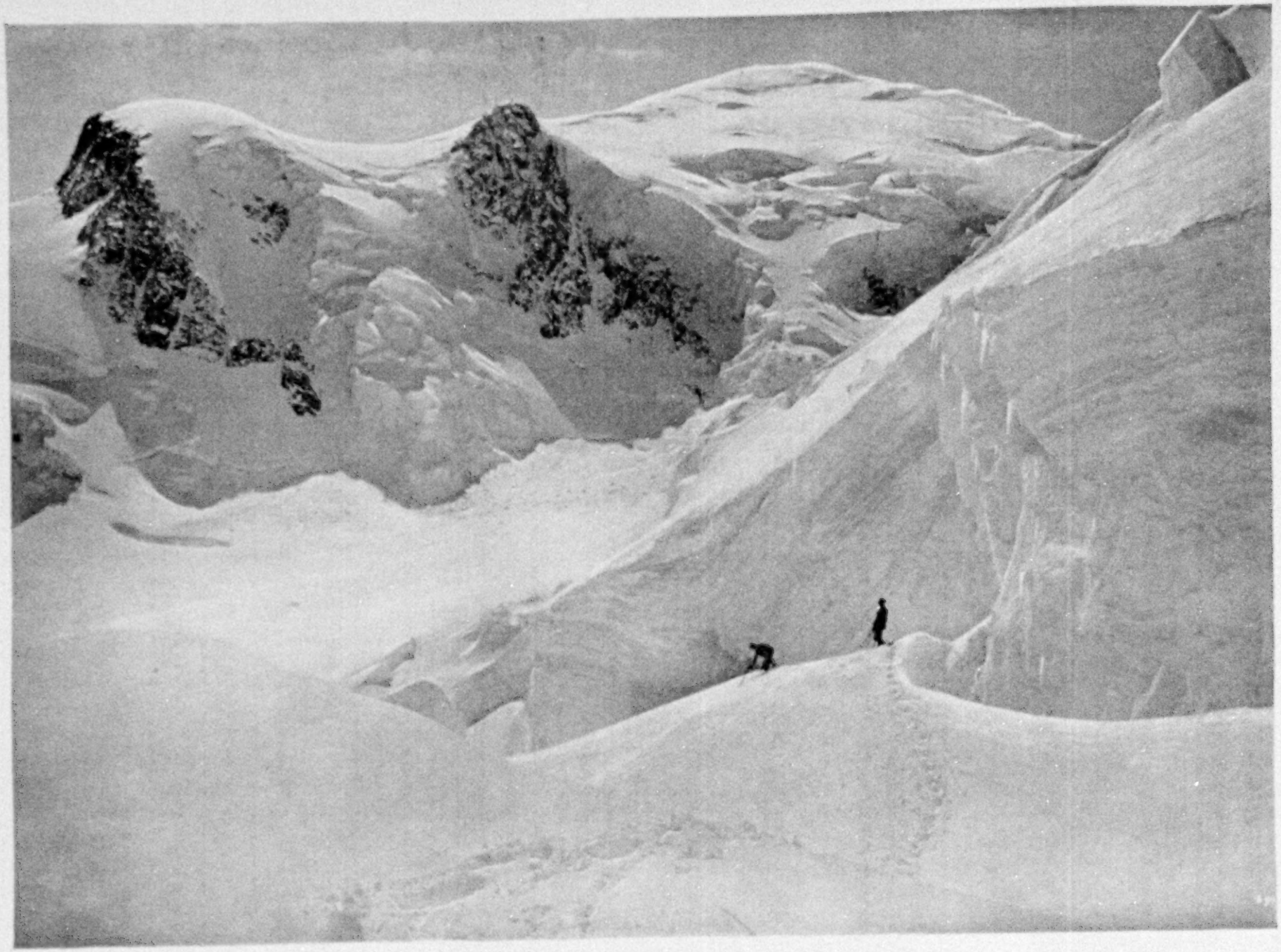


Photo by G. P. Abraham

THE GRAND PLATEAU AND THE SUMMIT OF MONT BLANC

"Imagine an oval ravine, as it were, sloping very gently upward for about 2 miles to the base of a conical peak, the summit of the mountain, its sides being formed by lofty walls of snow-covered rock, its entrance guarded by two almost perpendicular walls, and its bottom full of snow that has fallen into it for ages from the summit at its upper end and the ridges at its sides, and you have some idea of what the Grand Plateau of Mont Blanc is like. It is the head of the long snow slope facing Chamonix and beginning just below the summit" (see page 885).

XUM

697

Photo by S. G. Wehrli

THE SUMMIT OF MONT BLANC

"The panorama before you is immense; but everything is on such a grand scale, great agglomerations of plains and mountains, that all details escape you. Most of Switzerland, great portions of France as far south as Lyons, and the plains of Piedmont and Lombardy, in Italy, are spread out before you. . . . And I should not fail to speak of the Janssen Observatory at the summit, the boldest monument ever erected to the glory of science, situated here at the apex of Europe" (see page 893).

Mount Washington has reached 50 below zero.

ASCENDING MONT BLANC ON A SLEDGE

The energy and courage displayed by the veteran astronomer in carrying out his plan in the face of almost insuperable difficulties was indeed remarkable, and the more so as he was nearly 70 years old and so lame he could not climb a yard nor even walk easily on the level; yet he has had himself dragged to the summit three times on a sledge. During his first visit he stayed four days near the summit, making observations.

Though the descent in general is not so slow or laborious as the ascent, in some places it is more hazardous. The descent to the Vallot Refuge was particularly disagreeable, as the ridge seemed far steeper as you looked down it than it did in climbing up. We got to the Grand Plateau about eleven o'clock. The heat of the mid-day sun melts the surface crust on the slopes below, and our feet constantly sank into the porous substance at every step, so there was more danger of sticking fast and breaking our legs than of falling down precipices.

We enjoyed the sport of glissading down these slopes, where there was no danger of crevasses. Each seated on the snow, with his ice-axe for a rudder, would glide in a few minutes down a declivity which took an hour to climb up. Frequently those behind would overtake those in front; and, as all were tied together, it was great sport to roll together in a jumbled mass of flying legs and snow.

In five hours after leaving the summit we were at the Grand Mulets, where we stopped for an hour's rest. In three hours more we were again in Chamonix, with Mont Blanc behind us! In all we had been roped together 14 hours, and had suffered no mishap.

SKI-JUMPING AT GRINDELWALD Photo by W. Nehrkorn

In winter tourists from every part of the world assemble to enjoy the winter sports for which the little town offers an unrivaled setting. Conspicuous among these are ski-running and jumping, a sport of Scandinavian origin, but now thoroughly acclimatized in Switzerland, though introduced as recently as 1902.

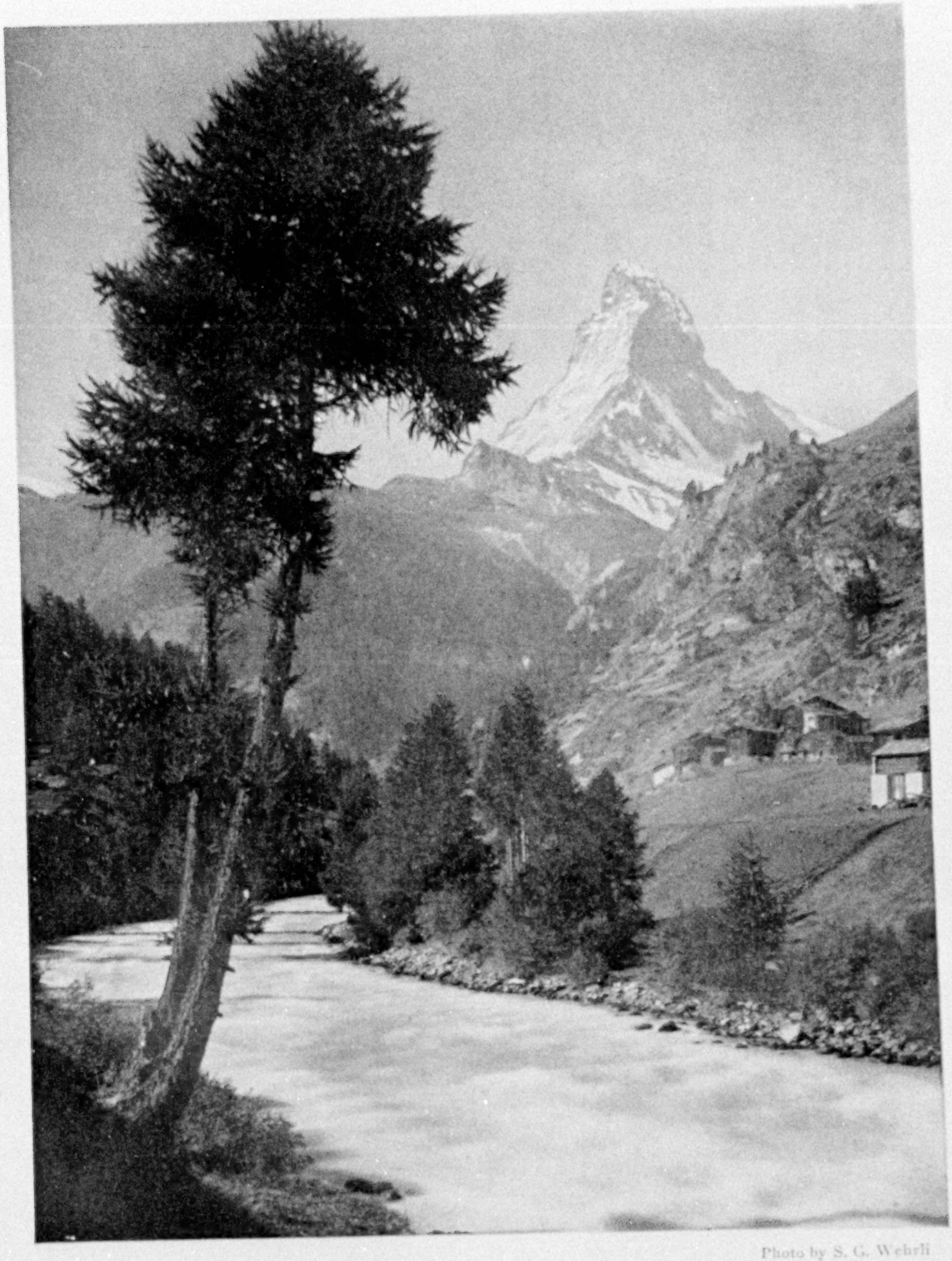


Photo by S. G. Wehrli

THE VISP NEAR ZERMATT

Zermatt stands at the foot of the mountains at the end of the long, narrow valley through which the Visp flows. Above the town and dominating the whole valley rises the majestic peak of the Matterhorn. Zermatt is a little community of about 500 souls, but it is crowded, or rather overcrowded, with visitors during a great part of the year.

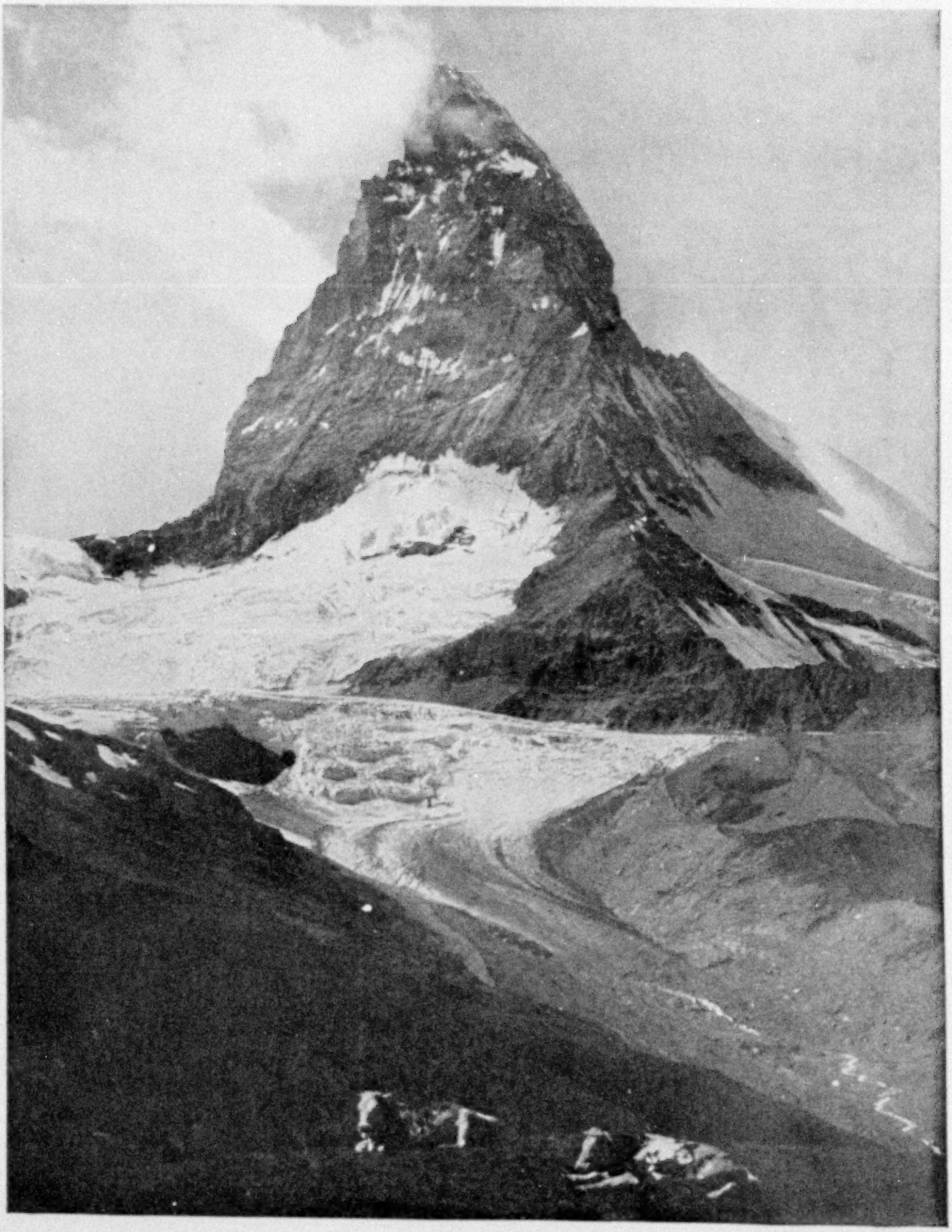


Photo by S. G. Wehrli

THE MATTERHORN

This immense rock pinnacle, soaring 14,782 feet in the air, is one of the most difficult mountains to climb in all Switzerland. It is among the chief peaks in the Pennine Alps, and lies about 6 miles from Zermatt. One of the greatest Alpine tragedies is associated with the first successful ascent in 1865; for, after scaling the summit, four of the party were hurled to their death during the descent.

Photo by S. G. Wehrli

CHALETS NEAR ZERMATT

The term *chalet*, which is applied to the picturesque wooden houses found in Swiss villages, properly belongs to the rough mountain huts shown in the picture. These huts are used by the cowherds and cheese-makers, who accompany the cattle during the long summer visits to the high Alps, where the herds pasture.

XUM

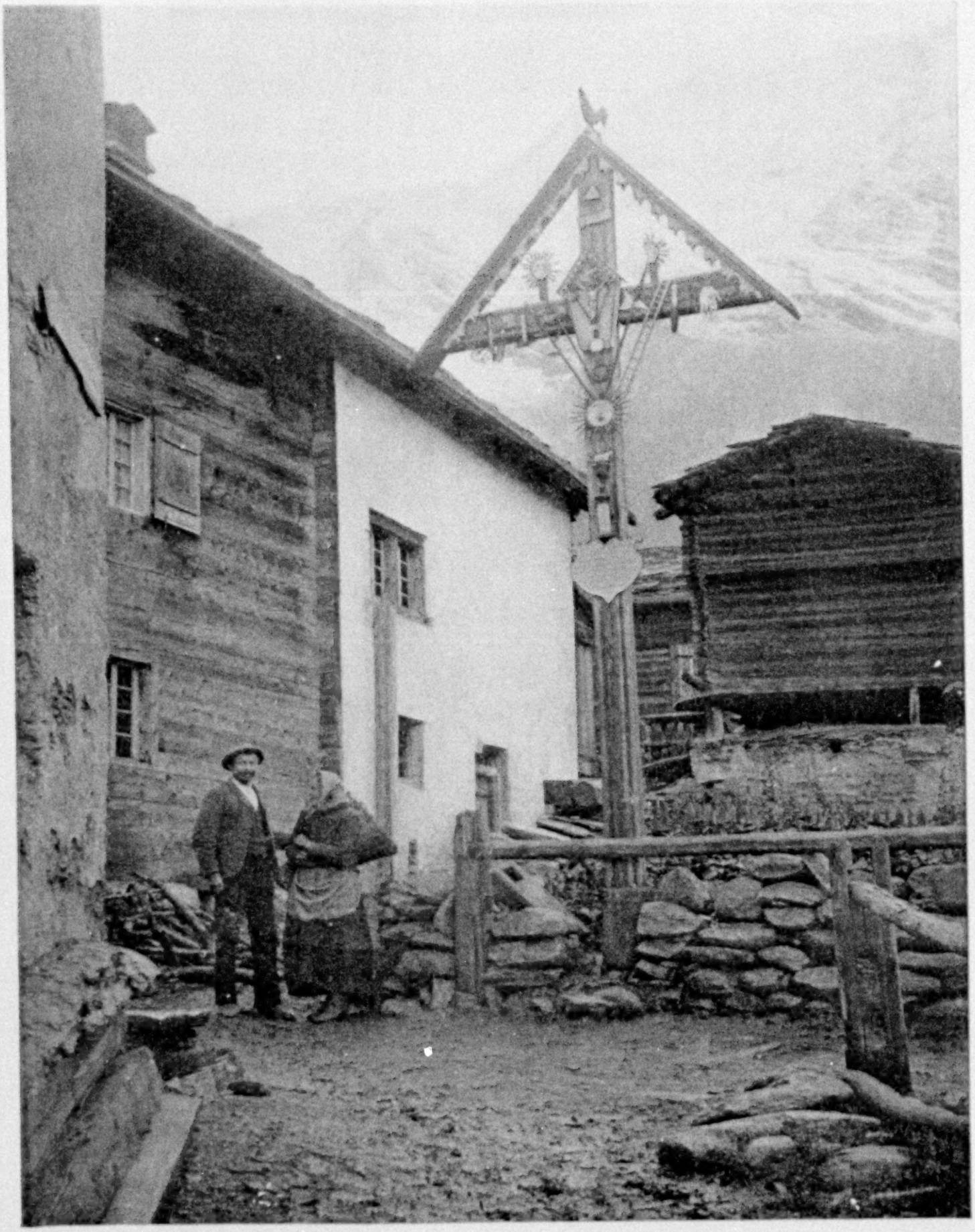


Photo by G. P. Abraham

THE VILLAGE CALVARY

Almost every village in the Catholic cantons has its Calvary, and in the country wayside shrines are not uncommon. There are numerous villages renowned for the excellence of the wood-carving they produce, and in these the Calvary is often of great artistic merit. In others the design may be fantastic and the execution crude, but there is always a quaint touch which redeems it from the commonplace.

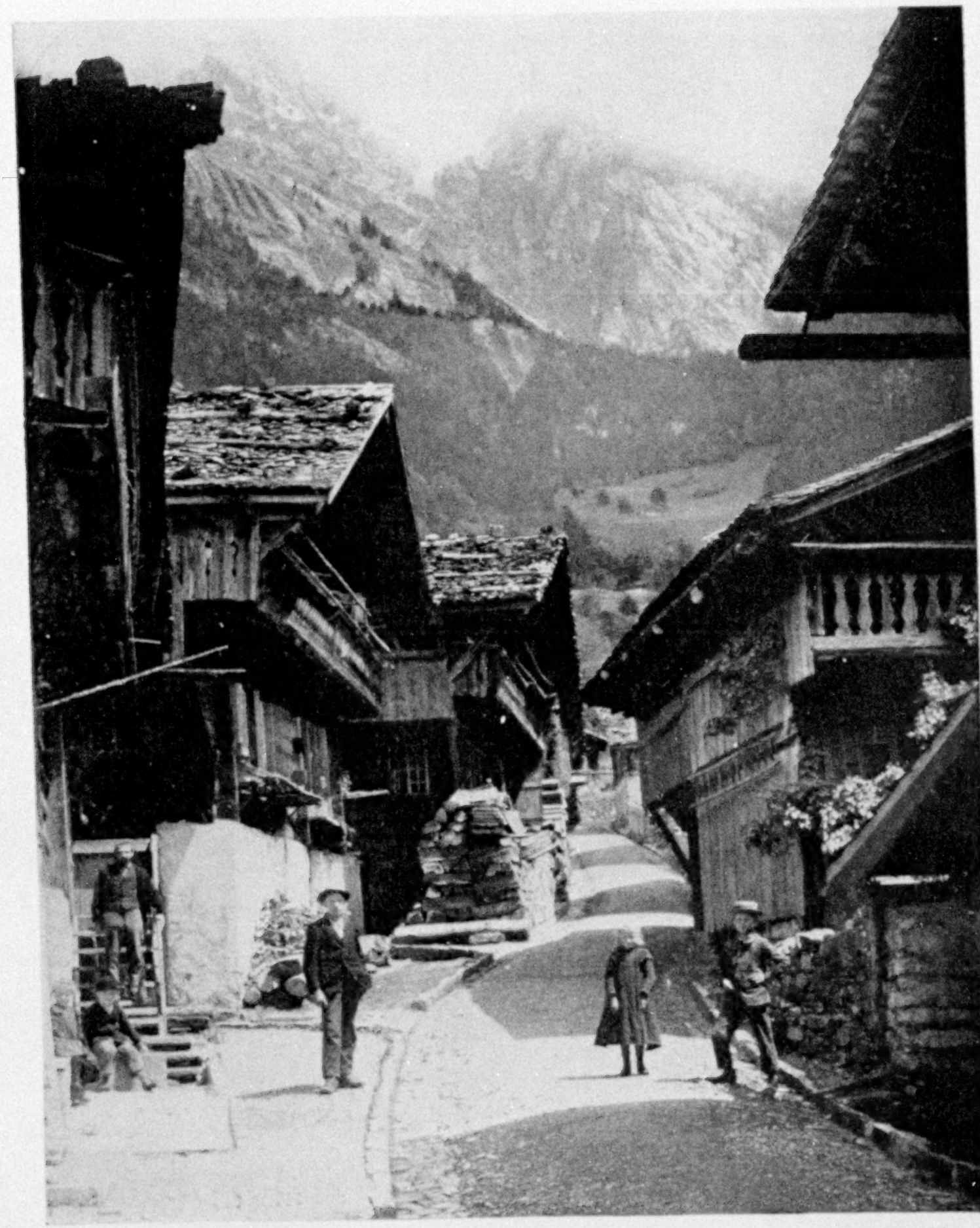


Photo by S. G. Wehrli

A STREET IN BRIENZ

This little city, standing on the banks of a lake of the same name, is famed for the picturesqueness of its streets and the beauty of surroundings. Behind the town is the Brienzer Rothorn, 7,715 feet high, which can be ascended by rail. Brienz is the center of the wood-carving industry of the Bernese Oberland.

XUM

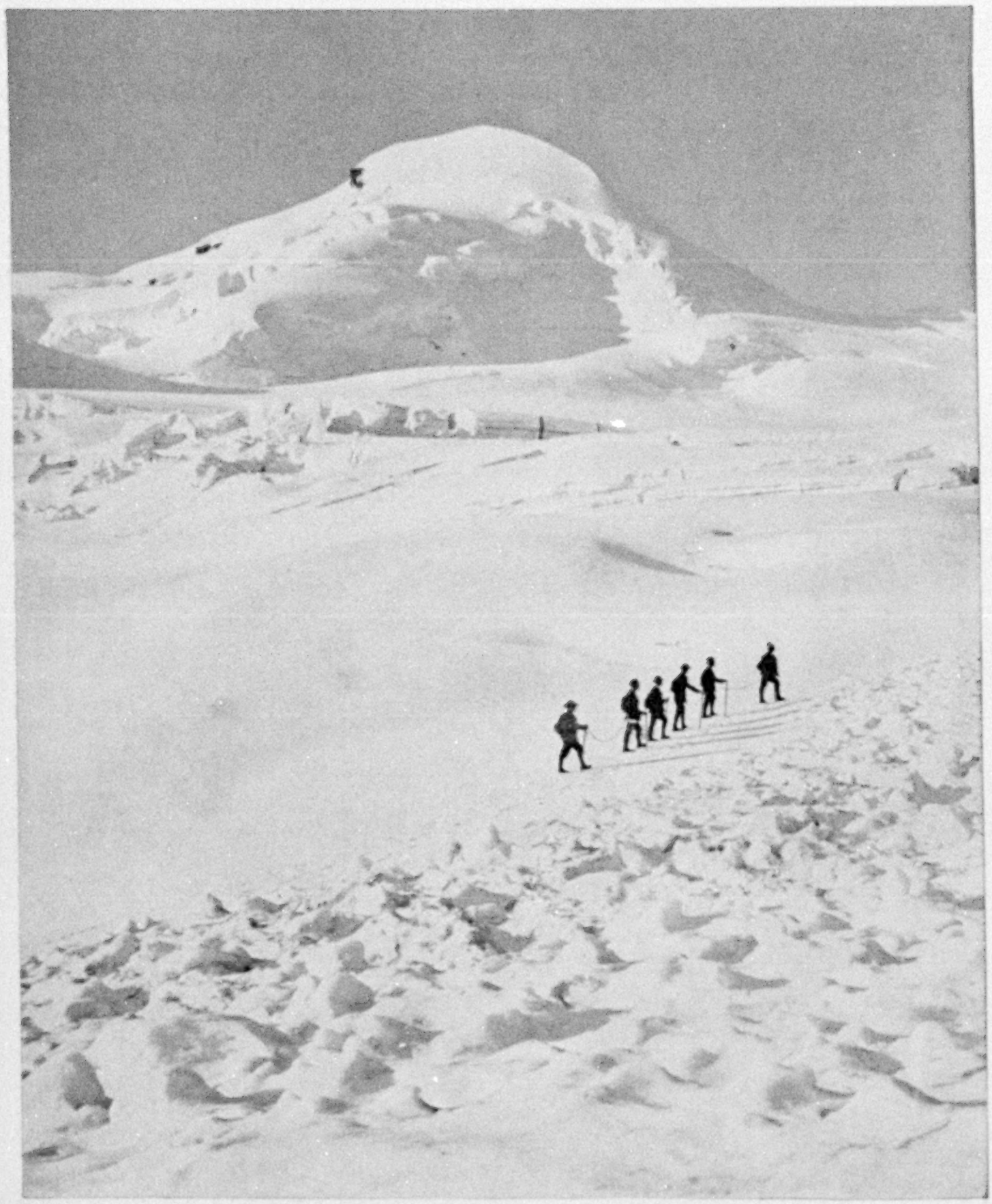


Photo by Donald McLeish

ASCENDING THE ALLALINHORN

The road from Zermatt to Saas leads over the Allalin Pass, at the height of 11,713 feet, which is always covered with snow. Rising above the pass is the Allalinhorn, from whose summit, 13,236 feet above the sea, can be seen many of the highest peaks in the Alps.

Photo by Donald McLeish

THE RIMPFISCHHORN FROM ALLALINHORN

The Rimpfischhorn, one of the higher peaks of the Pennine Alps, is 13,790 feet high. In this range are all the loftiest summits in the Alps, with the one exception of the Finsteraarhorn, in the Bernese Oberland. This photograph, taken from the Allalinhorn, itself 13,236 feet high, shows the topmost peak of the Rimpfischhorn. Note the band of climbers roped together in the foreground.

Photo by S. G. Wehrli

ON THE TOP OF THE BREITHORN

This peak is situated on the frontier of Switzerland and Italy and rises to the height of 13,685 feet. From its summit a magnificent panorama of the mountains can be obtained. In the center of the picture rises the Matterhorn; to the left the sharp point of the Dent d'Herens (13,715 feet); between them and far away in the distance the Dents du Midi (10,696 feet); to the right is seen the Dent Blanche (14,318 feet), with the Grand Cornier (13,022 feet) next to it.

XUM

Photo by S. G. Wehrli

A CHARACTERISTIC VALLEY IN THE BERNINA ALPS

The Bernina Alps run along the border-line between eastern Switzerland and Italy. The picture shows the Val Bondasca, dominated by the Pizzo Badile (10,863 feet), and the Pizzo Cengalo (11,070 feet). These Alpine valleys on the Italian side are famous for their grapes and still more famous for their wine. Each valley seems to produce a wine of a different character to that of its neighbor, a few miles away. The best known of these valleys, both for its scenery and its wine, is the Valtellina, where the Bernina Alps end toward the south.

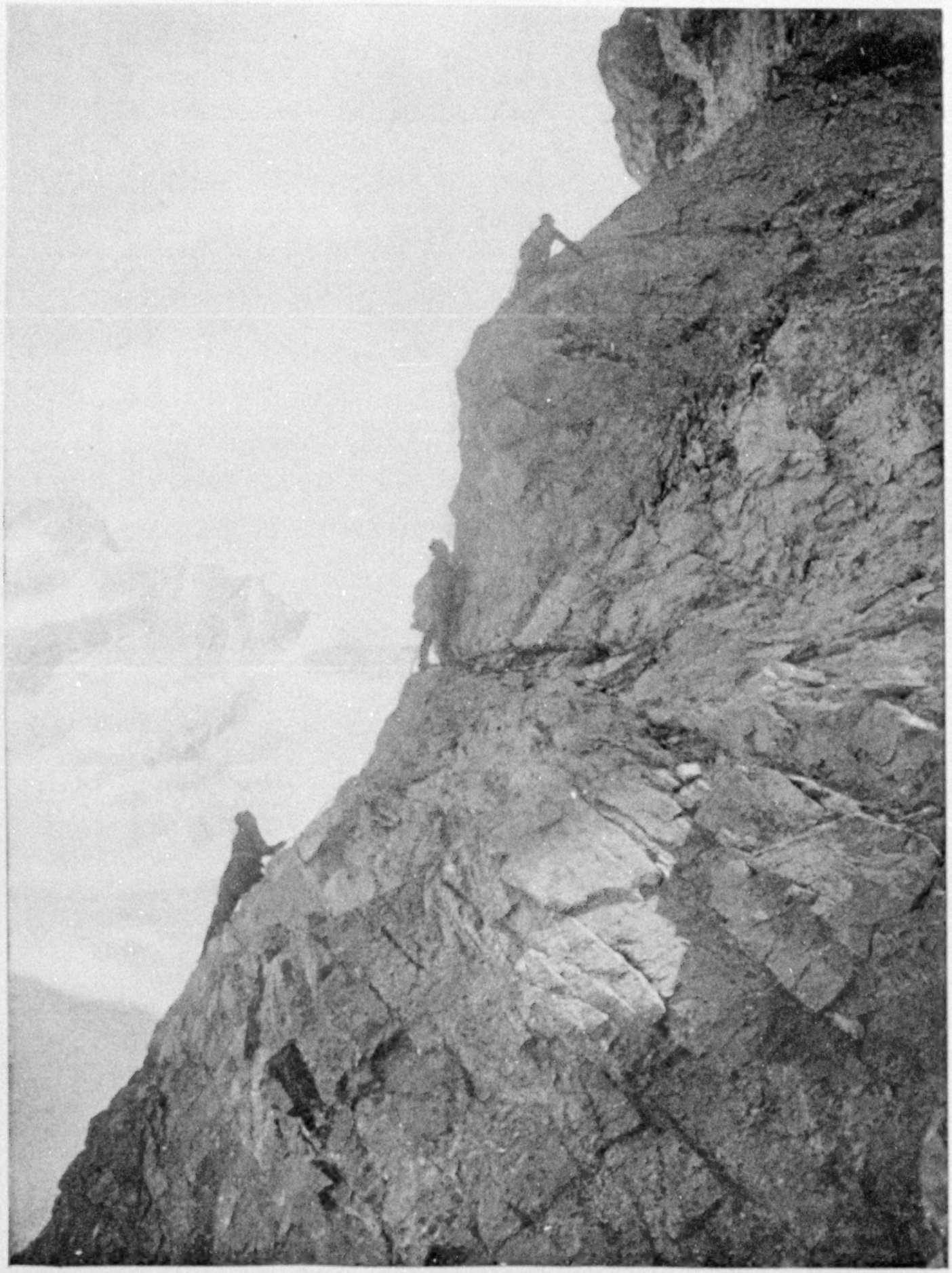


Photo by G. P. Abraham

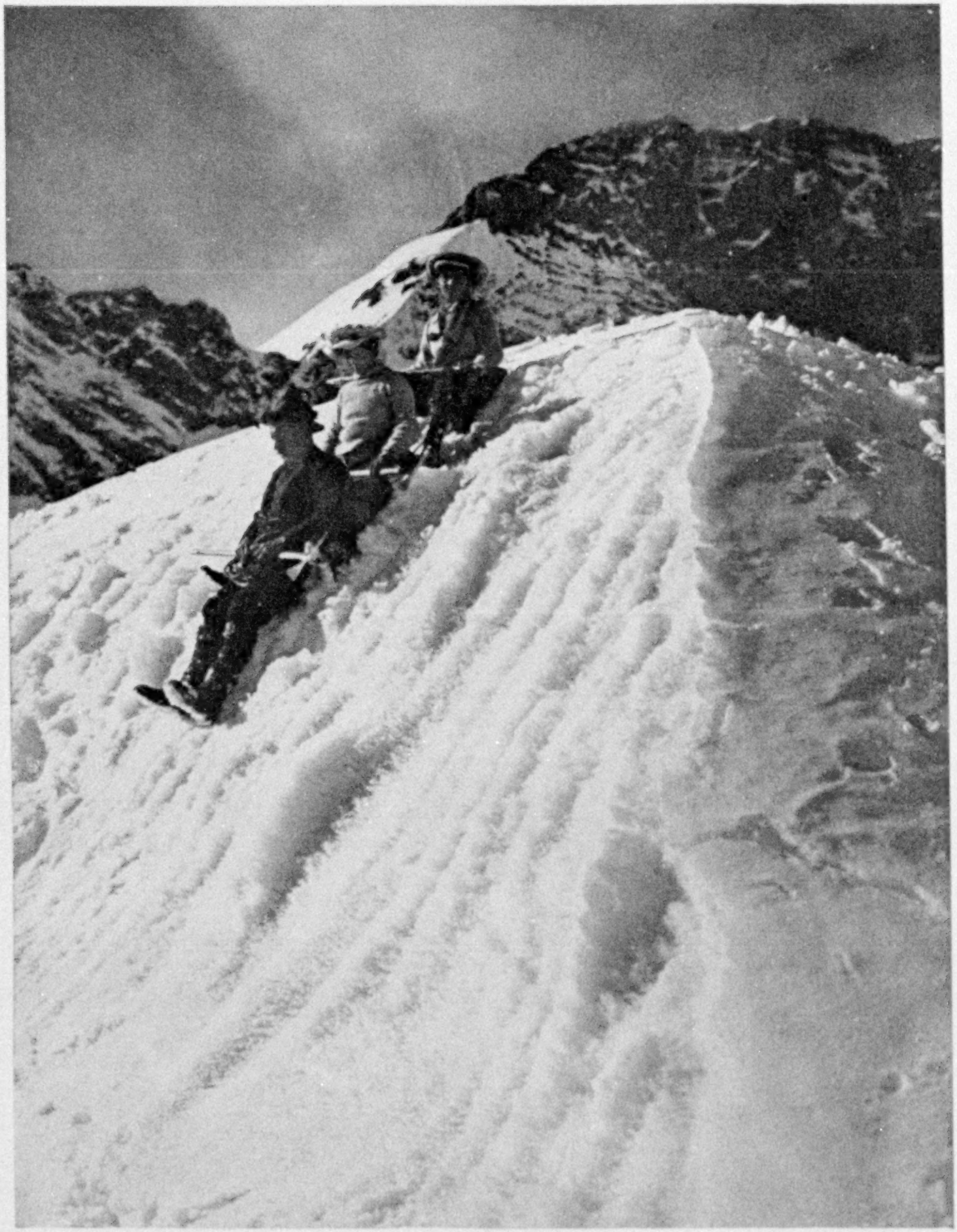
CLIMBING THE WETTERHORN

This is one of the imposing mountains of the Bernese Oberland and offers perhaps the most difficult rock-climbing to be found in the Alps. It stands near Grindelwald, and on that side presents a stupendously precipitous face, up which an ascent can now be made by a cable elevator, which climbs 5,500 feet up the mountain side. The Wetterhorn consists of three distinct peaks—the Mittlehorn (12,166 feet), Hasli-Jungfrau (12,149 feet), and the Rosenhorn (12,110 feet).

Photo by G. P. Abraham

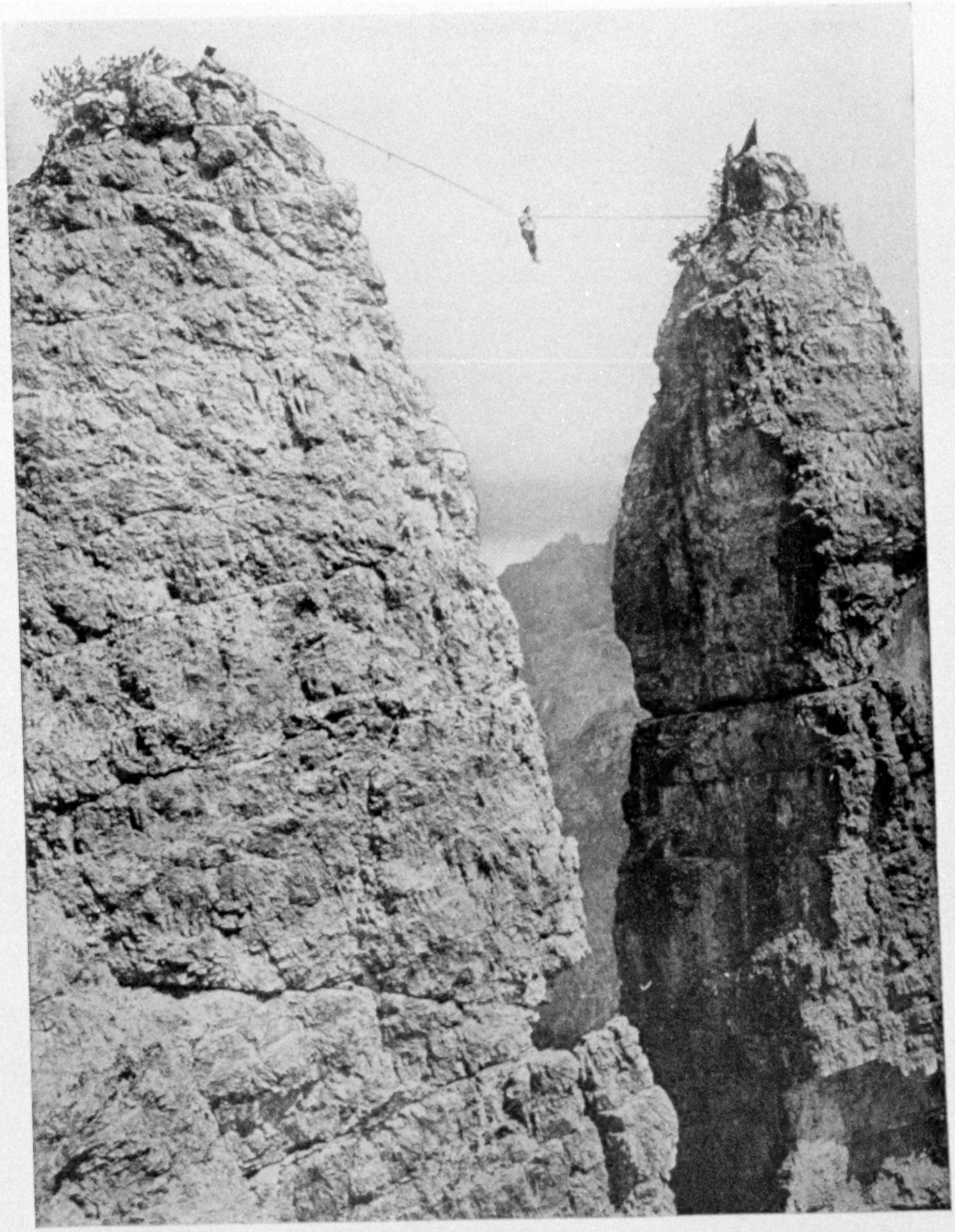
CLIMBING A CHIMNEY ON THE EIGER

The Eiger (13,042 feet), like most peaks in the Bernese Oberland, affords a good deal of difficult rock-climbing. These chimneys, as their name implies, are narrow clefts or funnels between great rock masses. They are often very hard to scale, as the sides may be absolutely vertical. The chimney in the picture is not by any means a difficult one, but it suggests the fact that mountain-climbing is a pastime only for those who love the strenuous life.



A SLIDING PARTY

A convenient method of negotiating short snow fields when descending a mountain is by sliding down them, as shown in the picture. It should be noted that this form of descent is apt to be somewhat painful should the snow be too hard or the distance too long.



CUGLEA EDMONDO DE AMICIS, SWITZERLAND: CLIMBED FIRST BY PRAZ ON JULY 17, 1906

Rock-climbing is perhaps the most difficult branch of mountaineering, as a successful climb calls for the exercise of a rare combination of qualities. The rock-climber must possess a steady head, a sure foot, considerable gymnastic skill, and, above all, careful judgment. Much depends upon the climber's skill in estimating the firmness of a rock upon which his weight will be thrown. Many loose rocks are sufficiently firm to bear a man's weight if he knows how to negotiate them without jerking. Some idea of the difficulties of rock work can be formed from this picture, where the least mistake in swinging between the two peaks means instant death.

XUM

Photo by S. G. Wehrli

THE CASTLE OF CHILLON

Famed alike for its beautiful surroundings and romantic interest, this castle on the shores of the Lake of Geneva is perhaps the best-known building in Switzerland. Byron, who immortalized it in his "Prisoner of Chillon," has been proved to have been entirely ignorant of the story of Francis Bonivard, who was imprisoned here from 1530 to 1536; yet, by a curious coincidence, he gives to his prisoner the historic name.

XUM

Photo by S. G. Wehrli

AT THE QUAY: MONTREUX

Few places on the shores of the Lake of Geneva have greater popularity than this group of villages, which is known collectively as Montreux. It is a deserved popularity, for all nature has conspired to endow this lake with an extraordinary charm which has drawn thither some of the most famous poets and writers. Among its enthusiastic admirers were Shelly, Rousseau, Voltaire, Gibbon, Madame de Staël, and Lamartine, while Byron wrote some of the finest stanzas of Childe Harold under the inspiration of its beauty.

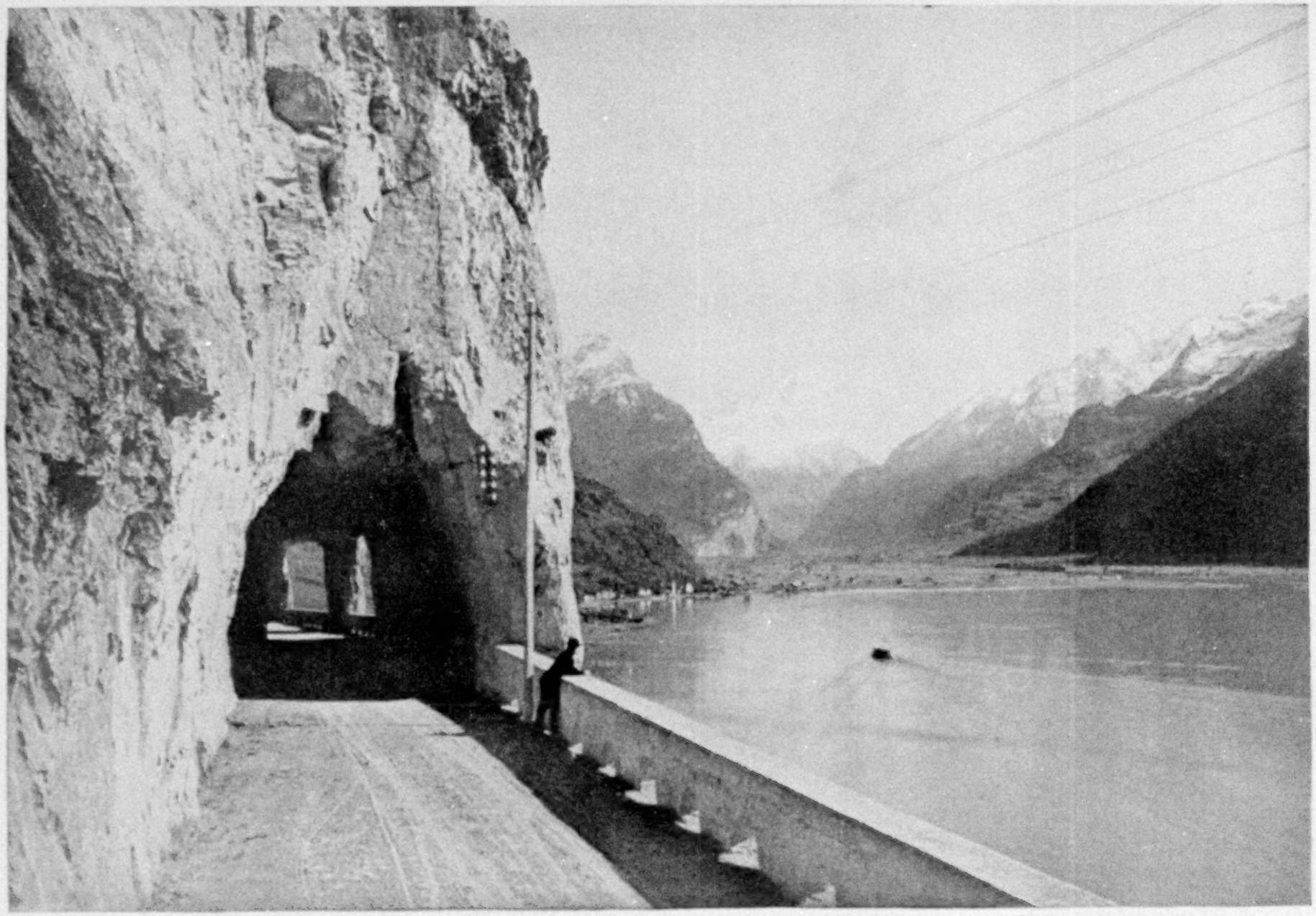


Photo by S. G. Welrli

THE AXENSTRASSE

This road, one of the most curious and picturesque in Europe, runs from Brunnen to Flüelen along the shore of the Lake of Lucerne. It is of strikingly bold construction, a great part of it running through tunnels hewn in the solid rock. The finest views along the road are obtained near the famous tunnel through the Axenfluh, which is pierced with windows which afford glimpses of the lake, lying 360 feet below.

XUM

Photo by S. G. Wehrli

SISIKON AND URI-ROTHSTOCK

Sisikon is a tiny village standing on the shore of the southern arm of Lake Lucerne and affording a fine view of Uri-Rothstock, towering 9,620 feet above the sea. The canton of Uri, in which the village is situated, is reputed to have one of the most democratic governments in the world, every legislative enactment being voted on directly by all the citizens assembled in what is called the *Landesgemeinde*, at which every man of full age has the right to be present. Uri is mainly a cattle-raising and dairying country, having but few industries. It is one of the three original cantons which united in forming the Swiss Confederation in 1291, from which Switzerland dates her independence.

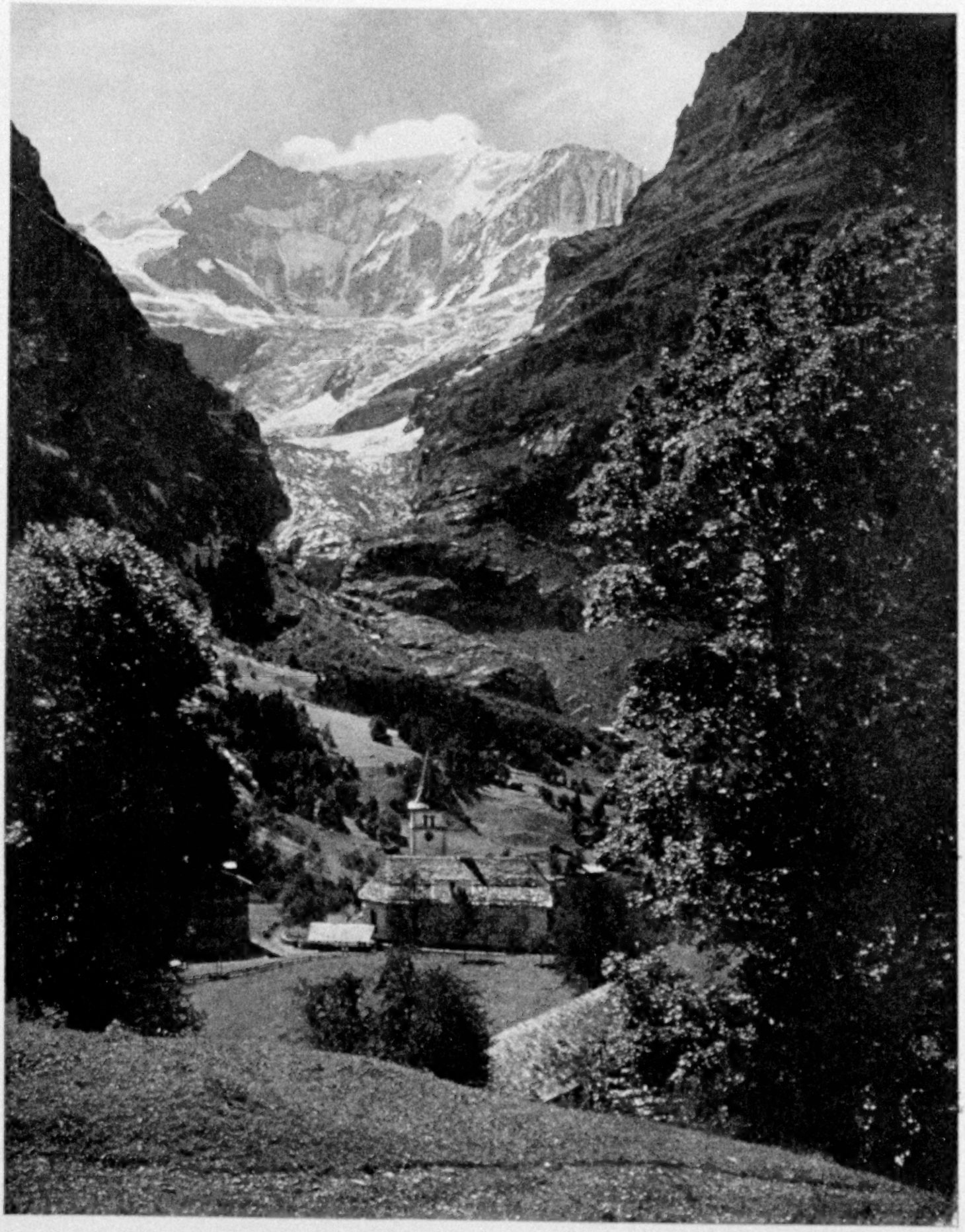
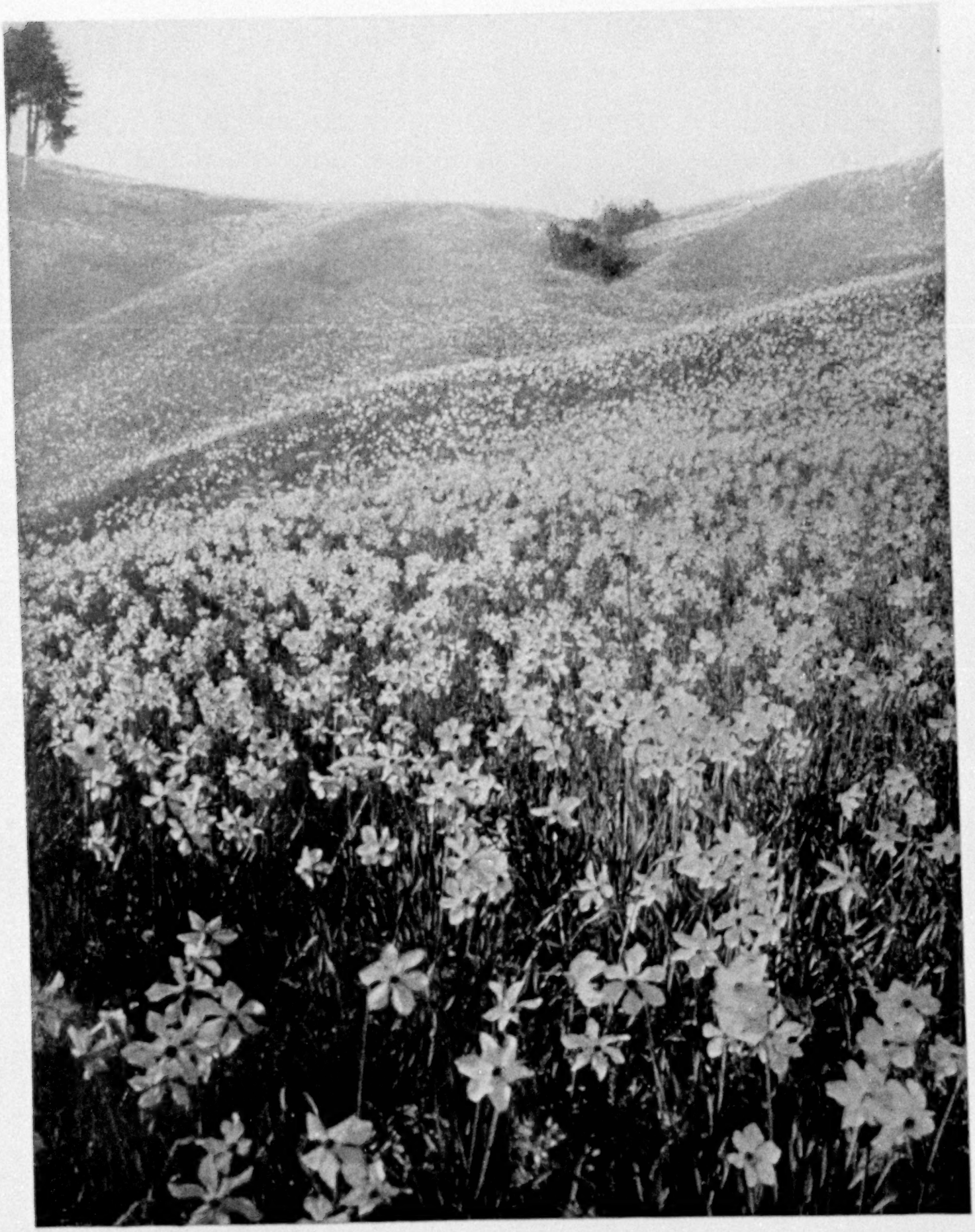


Photo by S. G. Wehrli

THE CHURCH AT GRINDELWALD

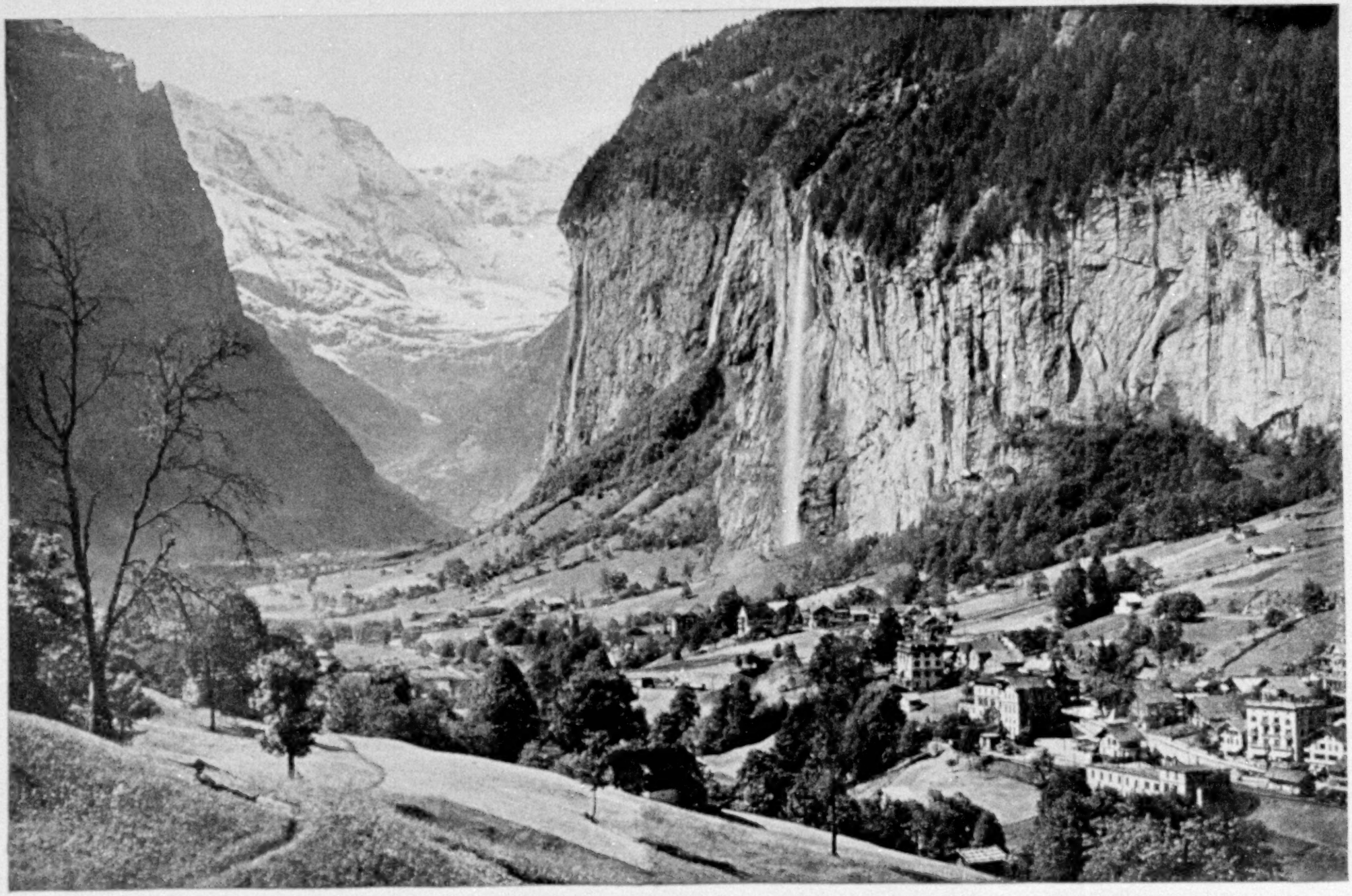
Famous both as a summer and winter resort, Grindelwald stands at the head of a beautiful sheltered valley rich in fertile meadow land. The whole country round the village is full of wild and romantic scenery and majestic mountain landscapes. The great Grindelwald Glacier is a source of attraction to the tourist, while the Eiger, the Wetterhorn, and the Mettenberg are the magnets which draw the mountaineer to this picturesque spot.



A FIELD OF WILD NARCISSUS AT MONTREUX

Montreux, charmingly situated on the shore of the Lake of Geneva, is one of the most popular resorts in Switzerland, both in summer and winter. At the end of September numbers of visitors arrive to take the so-called "grape cure," which consists of the not unpleasant prescription of eating an unlimited amount of the excellent grapes which grow in profusion on the hillsides above the town. Near Montreux are the equally popular resorts of Clarens, Territet, Veytaux, and Vevey—the scene of Rousseau's *Nouvelle Héloïse*.

XUM



LAUTERBRUNNEN

This pretty, scattered village, lying on both banks of the Lütschine, stands in a deep and rocky valley surrounded on all sides by mountains of such height that in winter the sun's rays do not reach it before 11 o'clock in the morning. It derives its name—"Nothing but springs"—from the numerous streams that descend from the mountains and from the springs that rise at their base. In the picture can be seen the famous *Staubbach*, or "spray brook," which leaps 980 feet over a rocky crag, its waters being converted into a silvery veil of spray before reaching the ground.

XUM

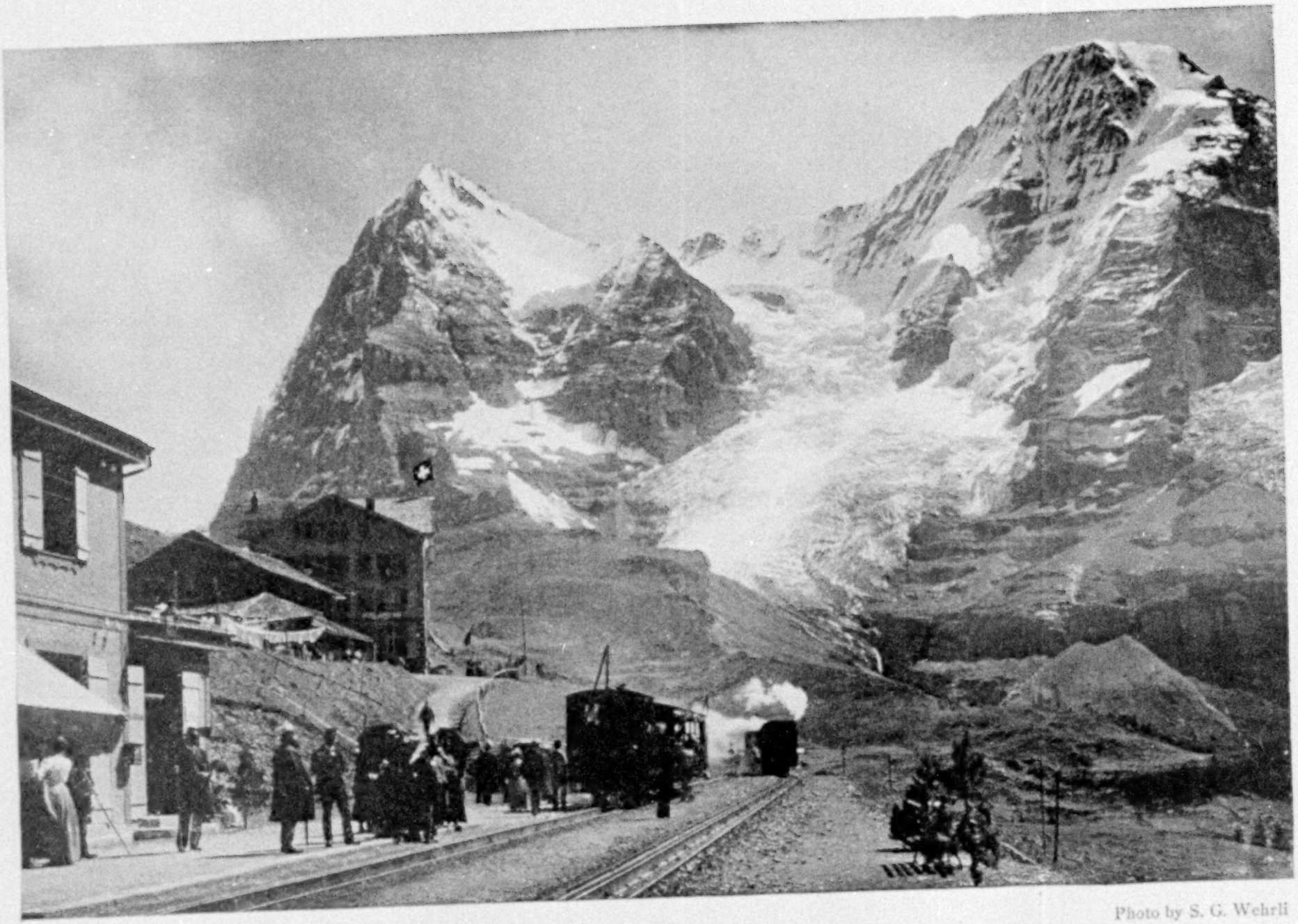


Photo by S. G. Wehrli

THE STATION AT WENGERNALP

This spot, which is nothing but a railroad station and a hotel, lies at the foot of the Jungfrau, the highest peak of which is not visible in the picture. From this point the traveler can see snow and ice avalanches, which on warm summer days occur several times in an hour. Watching these great snow masses descending from rock to rock on the mountain side like huge white cascades has an indescribable fascination which draws many tourists to Wengernalp, which also affords one of the most celebrated views in Switzerland, lying as it does at the height of over 6,000 feet above the sea.

920

Photo by G. P. Abraham

MORNING MIST ON THE WETTERHORN

Edward Whymper, one of the greatest of Alpine pioneers, thus describes the effect of these mists upon the observer: "No views create such lasting impressions as those which are seen but for a moment, when a veil of mist is rent in twain and a single spire or dome is disclosed. The peaks which are seen at these moments are not, perhaps, the greatest or the noblest, but the recollection of them outlives the memory of any panoramic view."

XUM

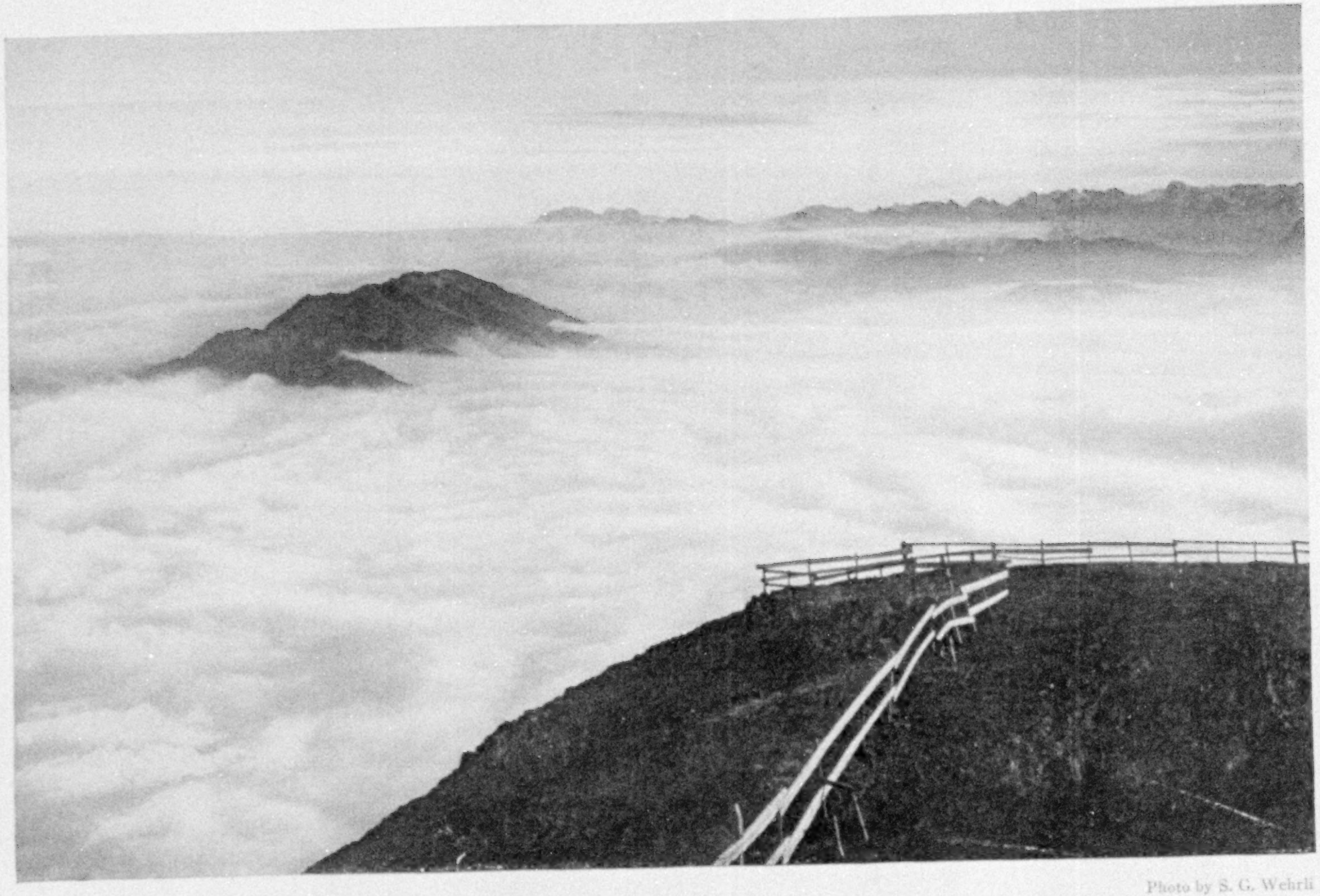


Photo by S. G. Wehrli

A SEA OF CLOUDS

One of the grandest and most inspiring sights in the Alps is that obtained from the mountain-top in the early morning. The valleys are filled with clouds which stretch away to the horizon like a vast sea; here and there some isolated mountain-top thousands of feet high emerges like a tiny island, while the tops of the vast Alpine chains appear as a rock-bound, snow-clad coast. Over all the rising sun sheds a stream of light, producing a color scheme which defies description.

A SWISS FARM

This typical Swiss homestead stands in the valley beneath the Monch and the Jungfrau. Notice the rocks used to weigh down the wooden roof—a precaution rendered necessary by the windstorms, which in winter sweep down from the mountains with terrific violence

XUM

023

Photo by S. G. Wehrli

THE EVENING HOME-COMING

As befits a pastoral country, the herds play an important part in Swiss peasant life and receive a greater amount of attention than falls to the lot of cattle in other parts of the world. When pasturing in the valleys, they return home in the evening to pass the night in the stables, which stand near or under the farm-house.

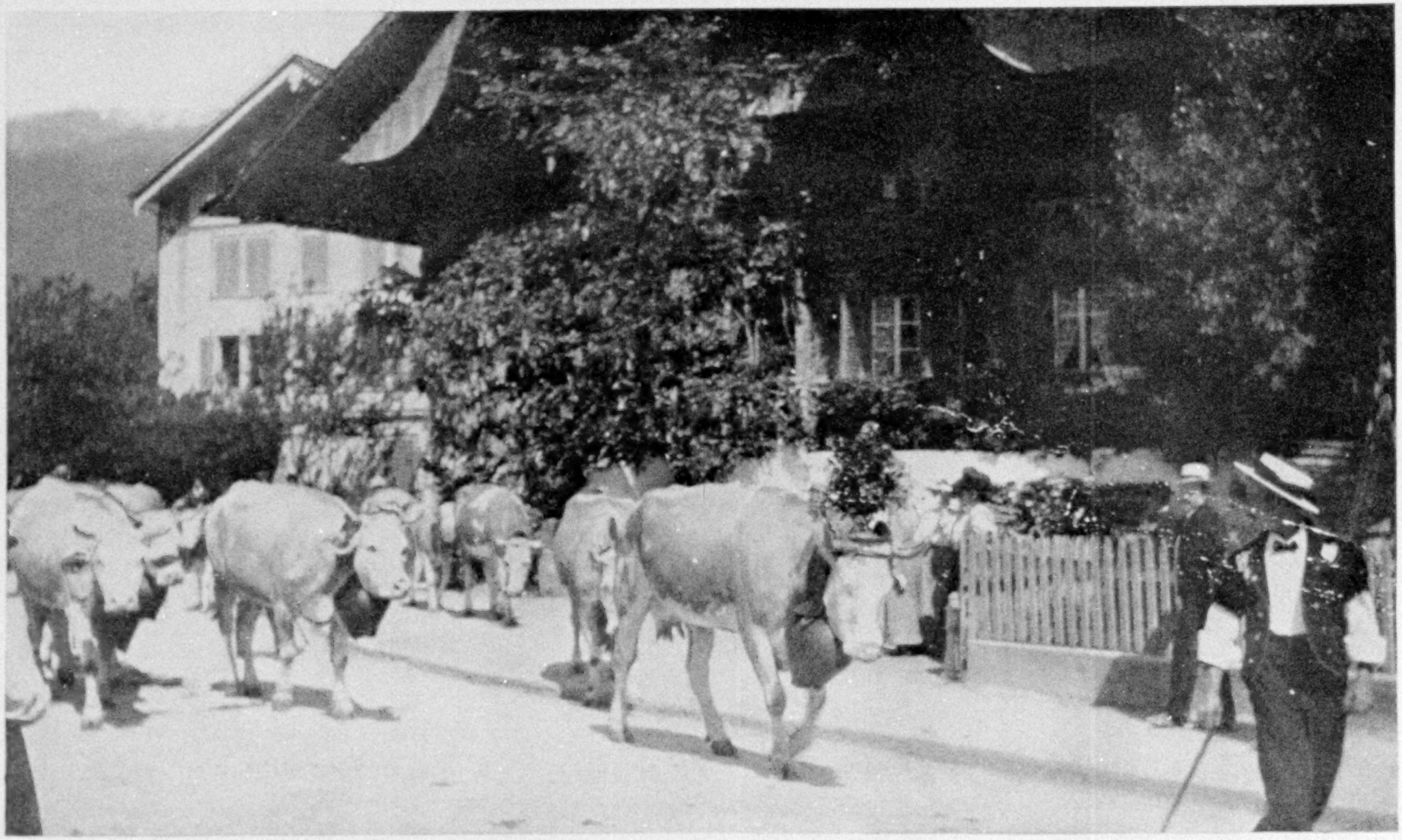


Photo by Alix Bodenheimer

MARCHING OFF TO THE ALPS

To most people the term "the Alps" means the high snowy mountains of Switzerland, but to the dweller in the valleys of that country the term has a very different and specific meaning. To them the Alps mean exclusively the summer pastures situated on the mountain sides above the valleys. These mountain pastures are essential to the pastoral districts, for the valleys do not produce sufficient fodder to support the cattle all the year round. In German Switzerland the Alps are the center round which the whole pastoral life of the people turns. The Alps belong to the commune, and the person having a right to pasture his cattle on any particular Alp cannot sell his right without selling the house and ground in the valley below to which the right is attached.

XUM

ALPINE PASTURES

In the spring all the cattle in Switzerland are taken up the mountain sides to pasture on the Alps. The lower Alps are visited twice—at the beginning and end of the season—while the upper Alps receive but one visit. Hay is never mown on the true Alps, except in places which are inaccessible to the cattle. It is then called wild hay, and belongs not to the owner of the Alp, but to the person who mows it. The pastures lying between the farms and the Alps are not communal property and are known as *Voralpen*. These are seldom pastured, but the hay is mowed and carefully stored for winter use. During the winter the cattle are stabled in buildings attached to the homesteads in the valley.

A RELIGIOUS PROCESSION IN APPENZELL

Each year the girls of Appenzell don the quaint traditional costume of the canton for taking part in the annual procession of the Virgin through the streets of the little town, which is a noted cure resort and tourist center. Appenzell is one of the oldest cantons in the Swiss Confederation, dating from 1513. It is divided into two half cantons. Inner Rhodes, of which the capital is Appenzell, is mainly agricultural and its inhabitants almost entirely Roman Catholics. Outer Rhodes, with its capital—Trogen—is devoted to cotton weaving, while its people are all Protestants.

XUM

Photo by S. G. Wehrli

A HOUSE AT INTERLAKEN

This house, known as "The House of the Cool Wine," is an admirable example of Swiss architecture. Note the masonry base, in which are situated the stables and cellars; the wooden superstructure, with its outside staircases and balconies which serve as passages, while crowning all is the great tiled roof, with its wide projecting eaves.

Photo by S. G. Wehrli

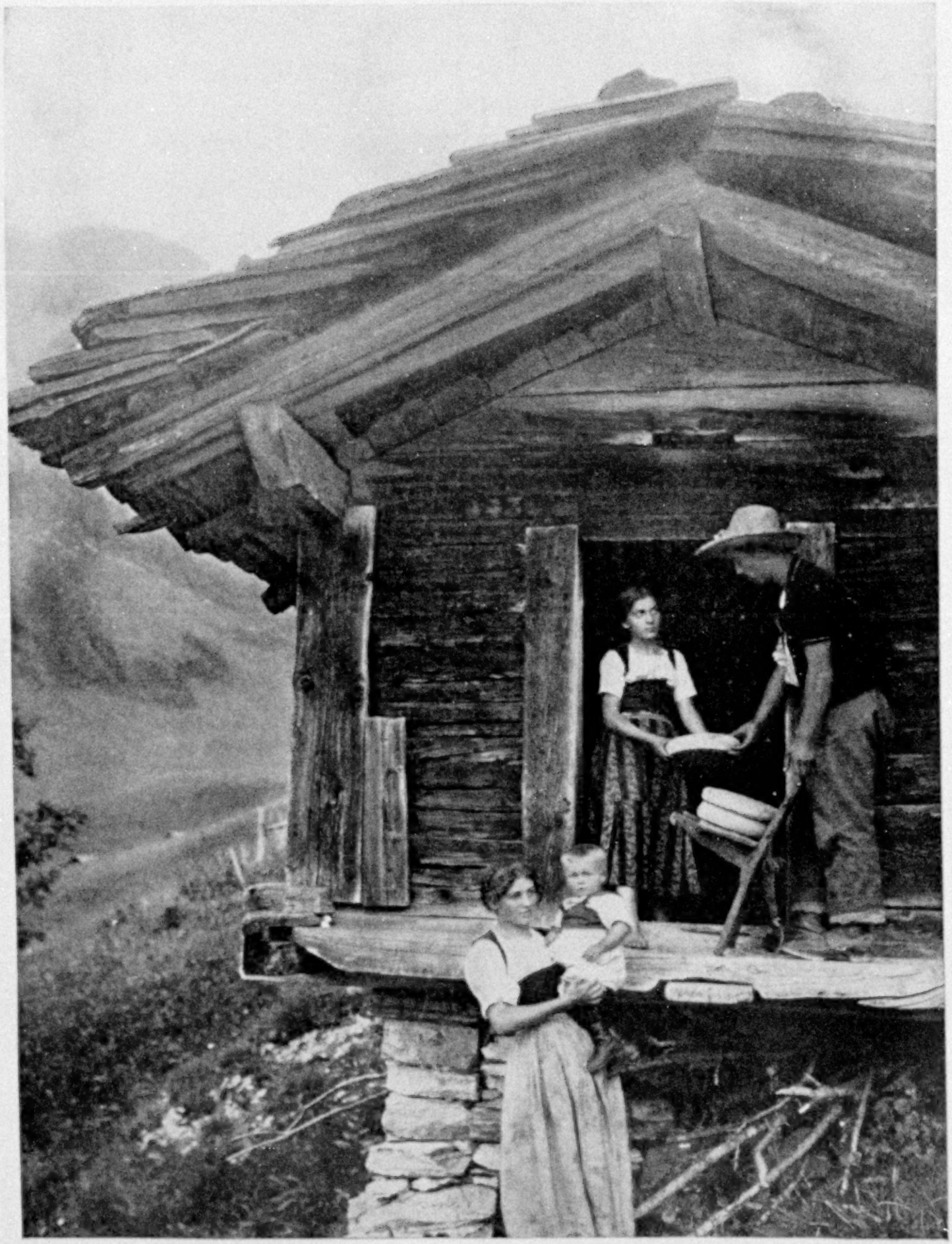
PICTURESQUE YOUNG GOATHERDS

Goats play almost as important a part in Swiss life as the cattle, much of the more palatable cheese being made from their milk. Note the picturesque costume of the boys—the gray breeches; the green vest, with its silver buttons; the feather and flower trimmed hats, and the jaunty silver ear-ring worn in the right ear.

XUM

PASTORAL SIMPLICITY

The traveler who wanders off the beaten tourist track, especially in the higher Alps, will frequently come across such scenes as this, which shows the simple peasant as he is, living on and with his flocks and herds. In all Europe there is no class more kindly, good-natured, and honest than the hard-working, unspoiled Swiss peasantry. Note how anxious the goats are to appear to best advantage in the picture.



AT THE DOOR OF THE SPEICHER

A *speicher* is a small hut built upon four stone legs (to secure the contents from mice), in which the cheese made during the summer visit to the Alps is stored. The cheese-makers, known as *sennen* or *fruitiers*, and their families follow the cattle from Alp to Alp all through the summer, turning the milk into the well-known Gruyère cheese, better known all through America as "Swiss cheese."

A CALL FROM THE HEIGHTS

The man is giving the call known as the *Juchzer*, a series of notes which, when properly produced, carries for an incredible distance. Another famous cry is the *Ranz des Vaches*, a curious plaintive melody used by the herdsmen to call in the cattle at milking time. Note the old-world costume of the girls—the velvet corsage with its silver bosses, the silver chains and pendants attached to the shoulder straps, and the embroidered velvet yoke.

XUM

Photo by S. G. Wehrli

AN APPENZELL GIRL

The Inner Rhodes, or half canton of Appenzell, is reputed to be the most conservative district in Switzerland, and it has retained many old customs and costumes; those of the women, as can be seen from the picture, are very quaint and attractive. The industries of the canton, most of them carried on in the homes of the country folk, are the manufacture of cotton goods, muslins, and embroidery, the latter being in a very flourishing condition.

Photo by Schild

AT THE SPINNING-WHEEL

Although Switzerland is perhaps the most tourist-ridden country in the world, the constant succession of visitors has not succeeded in spoiling the charm and simplicity of the peasant life. Off the beaten track can be found whole villages whose inhabitants lead the same uneventful patriarchal life that their fathers led before them. Handicrafts are hereditary in certain families—wood-carving in one, clock-making in another, and so on. In many of the more remote communities the peasants grow their own flax, spin their own thread, and weave their own linen today just as their forefathers did in the middle ages.

XUM

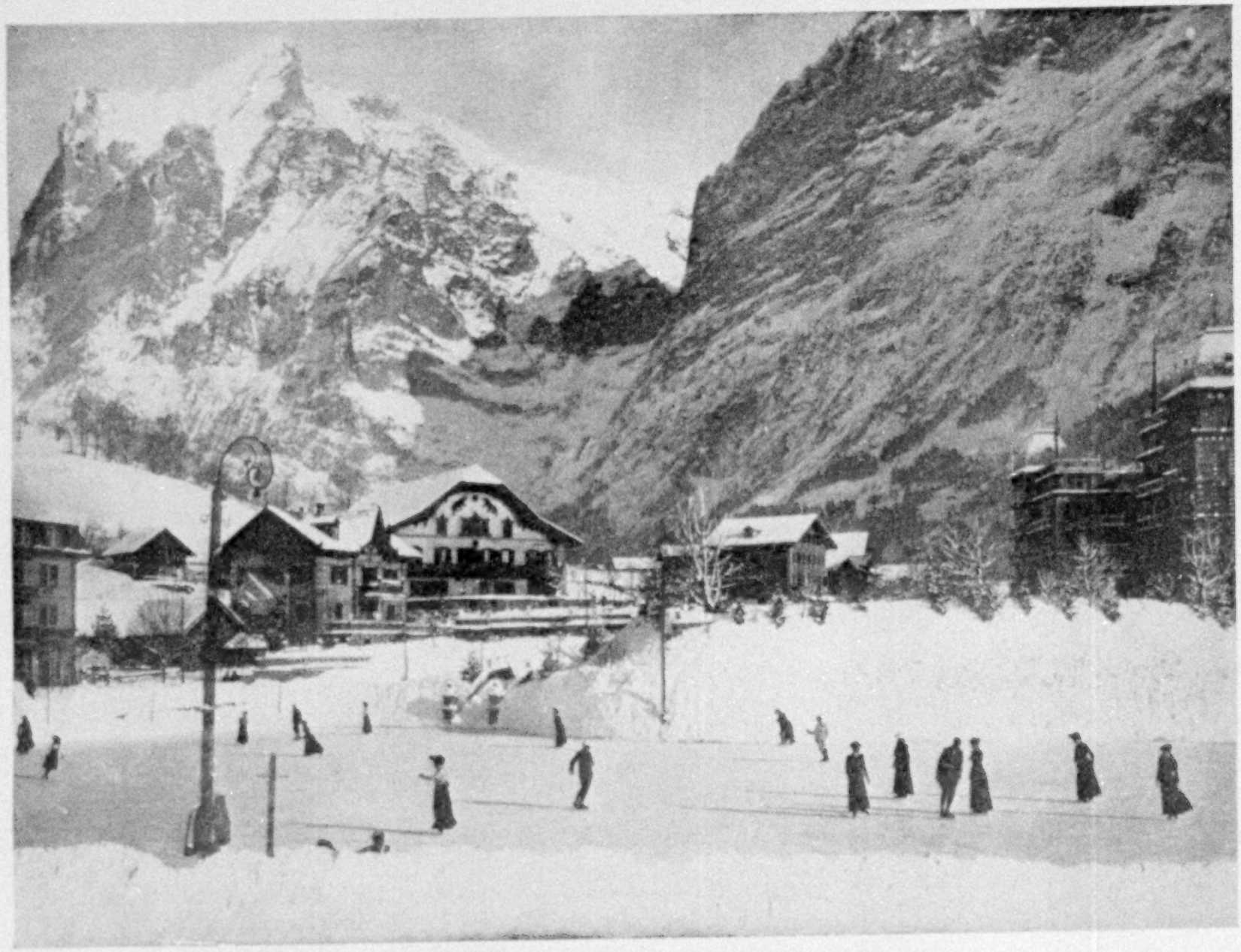


Photo by Nikles

WINTER SPORTS AT GRINDELWALD

Of recent years Switzerland has become a winter playground, as it offers unrivaled facilities for all winter sports. Skating, curling, ski-ing, tobogganing, can all be enjoyed to their fullest extent at Grindelwald, which consequently enjoys a succession of visitors all the year round. Curiously enough, there is no village of Grindelwald, properly speaking; the cluster of houses round the church was originally known as Gydisdorf, but the name of the valley came to be applied to the new settlement, and the original designation of the village is now almost completely lost.

Photo by S. G. Wehrli

A LUCERNE MILKMAN

Lucerne lies in an unrivaled situation on the shore of the lake of the same name. On the water front the city shows all the hall-marks of a popular travel center, with its palatial hotels, shops, and promenades. Behind all this lies the real Lucerne, a quaint old mediæval town, where the ordinary traveler seldom goes. The ancient wall, with its many watch-towers, still encloses the city, which has many quiet winding streets and picturesque gabled houses like those shown in the picture. Note the dogs used as draft animals.

XUM

EIGER, MÖNCH, AND JUNGFRAU

Photo by S. G. Wehrli

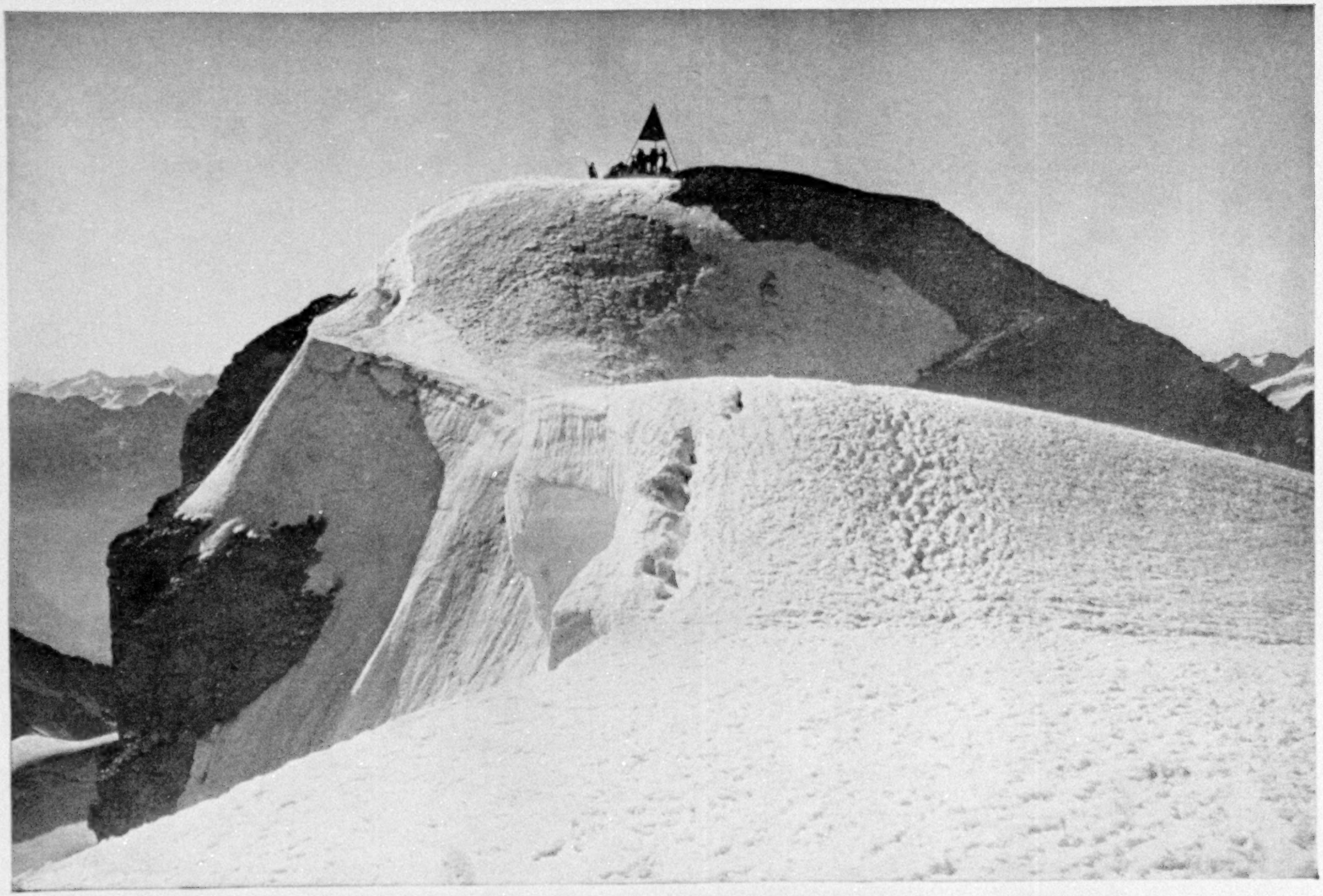
Some miles from the village of Brienz, in the Bernese Oberland, on the road to Grindelwald, stands a mountain called The Little Scheidegg, noted for the magnificent panorama it affords of the Eiger (13,042 feet), Mönch (13,468 feet), and Jungfrau (13,670 feet). Note the characteristic feature of all Alpine scenery shown in the picture, the three great glaciers flowing slowly, imperceptibly, yet surely down the sides of the mountains. The hut in the foreground is one of the *chalets* or *Sennhütten*, in which the herdsmen live during the time that the cattle are pastured on the mountain side in summer.

XUM

Photo by S. G. Wehrli

AT THE SUMMIT OF THE JUNGFRAU

This mountain is one of the most famous in all Switzerland. It is 13,670 feet high and was first climbed in 1811. The view from its summit is one of the wonders of the world, and to render this easy of access a railway has been built up the sides of the mountain, which, when completed, will land the traveler within 242 feet of the summit. At 10,000 feet above the sea-level is one of the strangest railway stations in Europe. It is cut out in the living rock, and the only sources of light are the openings cut in the side of the mountain. From this point the traveler can overlook the whole of northern Switzerland, the vista stretching away until it reaches Alsace and Baden, in Germany.



THE SUMMIT OF TITLIS

This is one of the most accessible, though not one of the highest, peaks in the Bernese Oberland, as it rises to a height of 10,627 feet, or nearly 4,000 feet lower than Finsteraarhorn, the ranking mountain of the range. Titlis lies between Interlaken and Engelberg, and is most conveniently ascended from the latter town.

XUM

Photo by S. G. Wehrli

A VIEW OF THE SCHRECKHORN

This picture shows the Shreckhorn (13,386 feet), one of the great mountains dominating the exceedingly picturesque village of Grindelwald. The view is taken from the upper névé or snow field on the Fiescherhorn, itself only 101 feet lower at its highest point. Grindelwald has become a favorite tourist center, and from it can be seen to best advantage three other famous peaks of the Bernese Oberland—the Eiger (13,042 feet), Wetterhorn (12,166 feet), and Mettenberg (10,194 feet). The village is now not only a summer resort, but it also attracts a large number of visitors, who go there for winter sports.

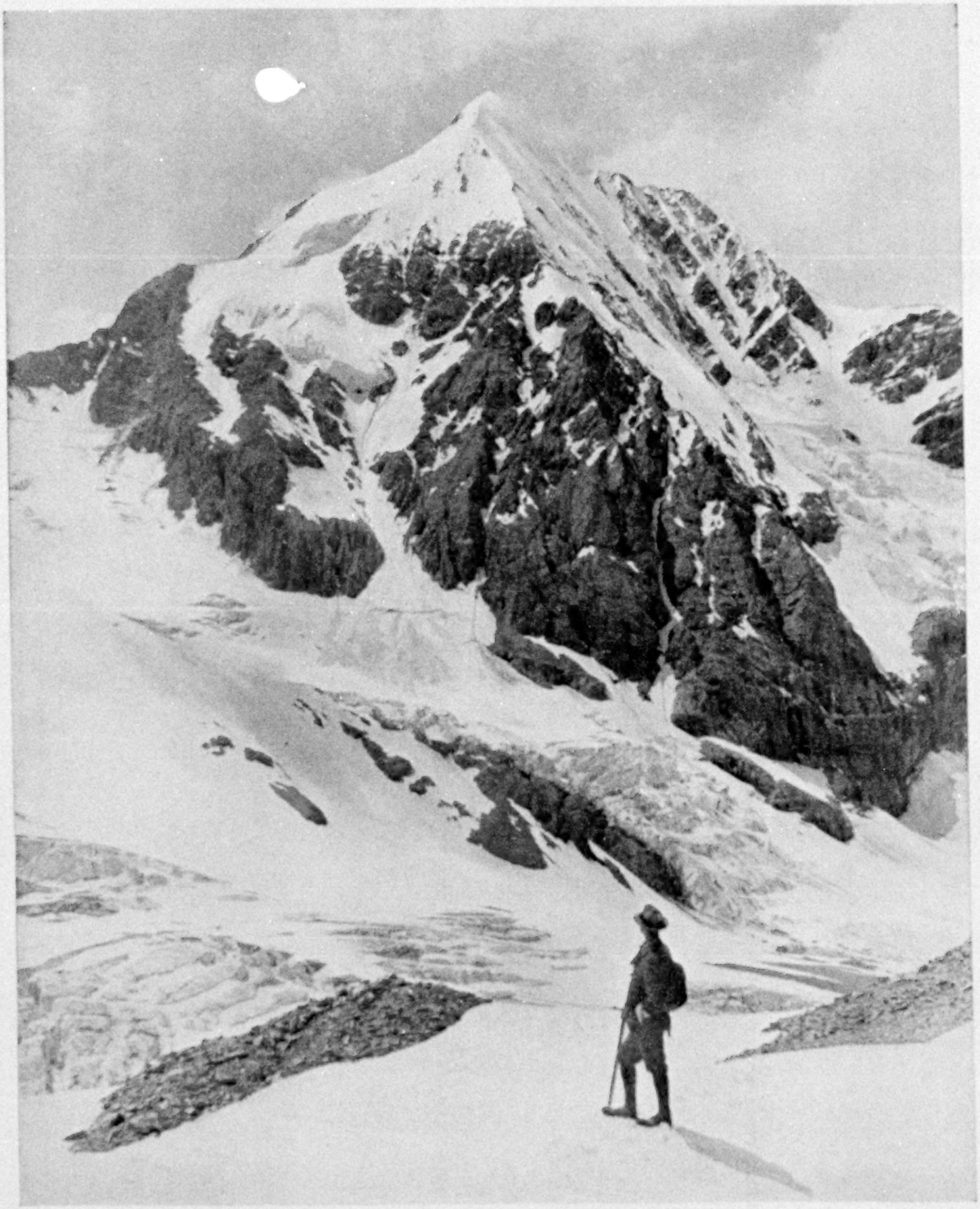


Photo by Donald McLeish

THE KONIGSPITZE FROM THE EISSESPITZE

In the eastern Alps there is but one other peak of greater height than the Konigspitze (12,655 feet), and that is Ortler, which is less than 200 feet higher. The Konigspitze is unsurpassed by any other peak in the Austrian Tyrol in grandeur.

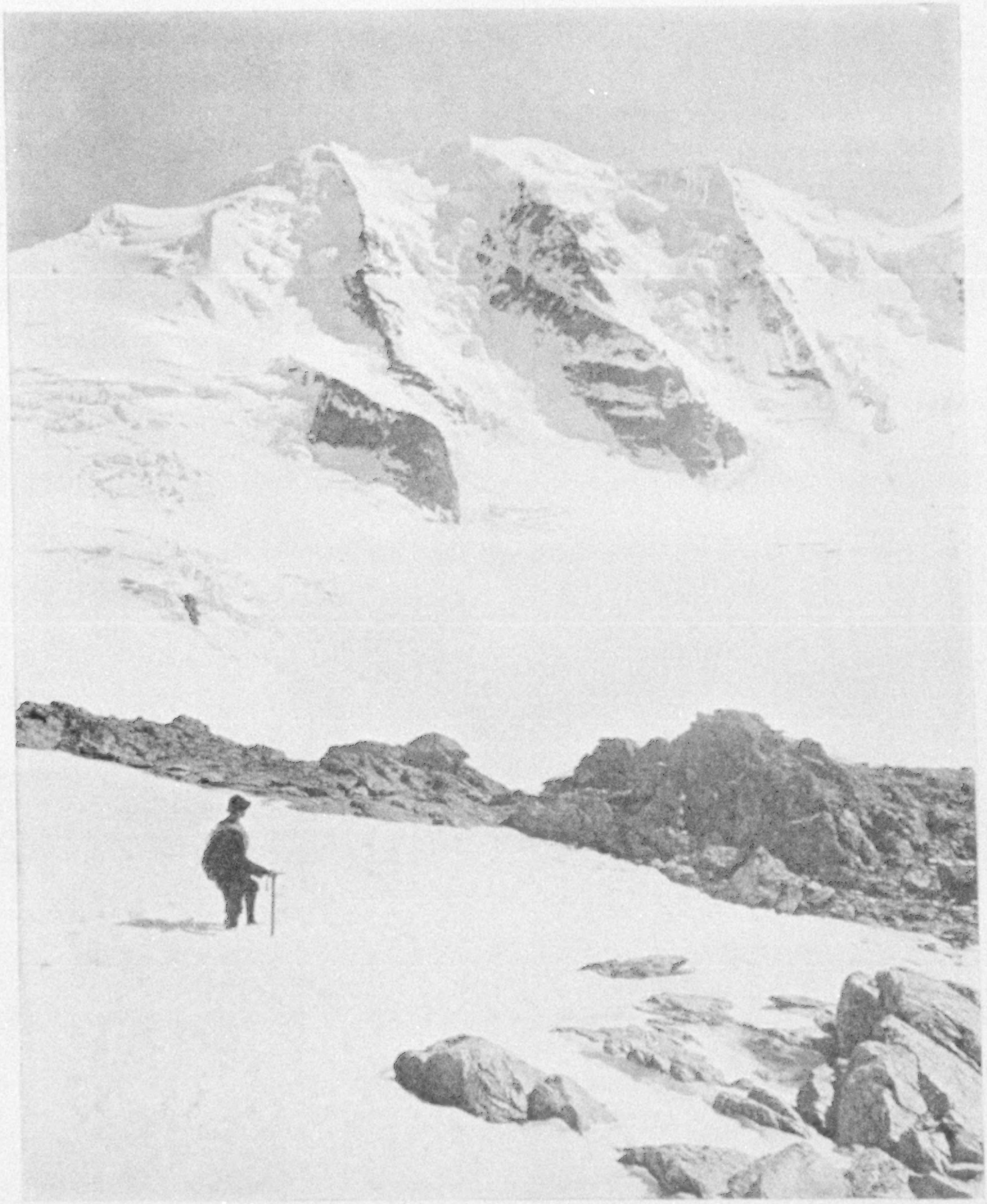


Photo by Donald McLeish

PIZ PALÜ FROM THE DRANOLRYRYA

One of the loftiest points in the Austrian Tyrol is Piz Palü, 12,835 feet above the sea. The mountain stands in the south of the Tyrol, near the Italian frontier

XUM

KLEINGLOCKNER AND SCHARTE

The Grossglockner, of which these peaks are offshoots, is the highest mountain in the Alps of the Central Tyrol, rising to the height of 12,461 feet

GEMS OF THE ITALIAN LAKES

By Arthur Ellis Mayer

THERE are many places of beauty and interest in Europe, but few that will compare in charm and grandeur with the Italian lakes. Here nature seems to have opened her storehouse and lavishly displayed her great work; for there are few places where one has such a wonderful combination of air, sky, water, mountains, and vegetation as well as embellishments by works of man, both ancient and modern. I mention the sky, for here we have the azure blue color found in Italy, but rarely, if ever, in our own country; this, when reflected in the deep emerald waters of the lakes, with the snow-crowned mountains, palm trees, villas, and palaces, makes a picture in colors never to be forgotten.

There are many lakes located in the extreme northern part of the country, some forming a portion of the boundary line between Italy and Switzerland. The most beautiful of these, however, are Lake Como, Lake Lugano, and Lake Maggiore, and to these we will devote our special attention for a short while.

LAKE COMO

It is but a short journey by rail from Milan to the shores of Lake Como, considered by many to be the most beautiful of all the lakes in northern Italy. This charming lake was one of the favorite haunts of the old Romans, and was known among them as Lacus Larius, but is now the summer residence of the Milanese aristocracy. It is 38 miles long, one to three miles wide, and situated among lofty mountains, some rearing their peaks 5,000 feet above its placid waters.

The journey up the lake is one of the most enjoyable scenic treats it is possible to conceive. At one moment it appears as a wide river, the banks being lined with verdant slopes and terraces for the growth of the vine, while at the next it opens out as a vast stretch of land and water with unrivaled natural effect.

As the boat glides swiftly onward, wonderful glimpses are to be had of the snow-white villas and grim turreted castles peeping out of the forest and semi-tropical gardens. Another interesting feature is the color of the foliage, as the shores are bordered with the dull gray-green of the olive, while a little higher up is the brilliant green of the walnut and chestnut, which harmonize so well with the deep-blue sky and placid waters. There are many peninsulas and promontories jutting out into the water, and on these are the odd and quaint villages surrounded by their gardens, palms, and olive groves.

THE GEM OF THE LAKE

On one of these stands Bellagio as a jewel in the crown of nature, situated about half way up Lake Como, where the southern extremity of the lake divides into two bodies of water, the other being called Lake Lecco (see page 949). It is a charming location and the town no less interesting, for here we have the busy arcades, where the merchants display their wares of local industries.

These consist principally of manufactured woodwork made into inlaid boxes, picture frames, and small articles of various forms, and silks made into blankets, scarfs, etc. It is indeed very interesting to see the old-fashioned processes by which these are made and the marvelous dexterity with which the peasants use their hands.

Several streets leading to the upper portion of the town consist of ancient stone steps, lined on both sides with shops and homes of small industries. At the top of one of these flights of steps stands the old church with the quaint chimes that mark the hours and quarter hours now as it did in ages past; these are answered by others across the waters from numerous villages dotted along the shores. The hotels are charmingly situated among beautiful palm trees and roses, making a very picturesque appearance.

Following a zigzag path up the side of the hill, a few minutes' climb brings into

XUM

Photo by S. G. Wehrli

MONTE CAPRINO AND THE CHURCH OF CASTAGNOLA

Opposite Lugano is the village of Castagnola and Monte Caprino, famous for its *cantine* or rock cellars. This is a favorite resort of the dwellers in Lugano, who on Sundays and holidays flock there to enjoy the far-famed wine, known as Asti, of which the cellars always contain a plentiful store.

Photo by S. G. Wehrli

SANTA CATERINA DEL SASSO

Half way down the eastern bank of Lake Maggiore stands the monastery of Santa Caterina, perched on a rocky crag overhanging the blue waters. Embedded in the roof of the abbey church is a great boulder that fell from the heights above in the 17th century. From this point perhaps the finest views of the Borromean Islands can be obtained.

XUM

view the Villa Serbelloni, a graceful structure located near the edge of the hill and built on several terraces. The luxuriant palm trees, with their yellow clusters of dates and green leaves, stretch out their graceful arms in all directions.

Here a beautiful park is laid out, which is traversed by numerous shaded walks and grottoes, where one may rest in comfort, protected from the intense rays of the mid-day sun. A wonderful view is to be had of the several bodies of water stretching out below, while in the distance is discernible the cap of everlasting snow of the higher Swiss Alps.

VILLA CARLOTTA

There are many pleasant little excursions in all directions from Bellagio, both by land and water. One of these interesting little trips for the sojourner is to cross the lake to the Villa Carlotta, which is the property and summer home of the Duke of Saxe Meinigen. Here we have one of the most magnificent gardens it is possible to conceive. The coloring of the flowers that grow in every nook and corner are beyond all description, and should one unfamiliar with this country see these colors reproduced on canvas they would certainly be declared overdrawn. The predominating flower, however, is the azalea, which seems to bloom in almost every conceivable color.

Near the garden is a beautiful wood, and as one walks through the dense semi-tropical growth on all sides of the path attention is at once called to the quantities of orchids of many hues which may be seen clinging to the trees.

From Bellagio it is but a few minutes by steamer to Menaggio, and on this trip we see for the last time the square-rigged sailing vessels and the peculiar characteristics of the barcas, or boats which are made serviceable in all kinds of weather by spreading canvas over hickory arches fastened on either side to the bulwarks.

Menaggio is a quaint little town, but the spirit of commercialism is rather more apparent than at other points (see page 950). Here we take a steam tram, which winds up the side of the mountain, and as one looks backward from the heights the silent town of Bellagio can be seen nestling at the base of the bold promontory, with the white buildings of the Villa Serbelloni above. For a time the train follows the banks of a wild and rushing mountain torrent which flows into Lake Como, while later it descends on the brink of a great gorge containing a similar rushing stream, until Porlezza, on the shore of Lake Lugano, is reached.

LAKE LUGANO

This lake, being much smaller than Lake Como, is but sixteen miles long and two broad, differing very greatly from the latter in scenery, as we find the densely wooded mountains dipping precipitously into its waters, while a great sense of stern solitude seems everywhere to prevail. The deeply serrated tops of the snow-clad mountains seem to protrude far into the sky, often delighting the eye with beautiful clouds hovering about their heads.

A noted change in vegetation occurs the moment the Bay of Lugano is entered: instead of the rough and rugged variety, it is of a rich and thriving nature, vying with the neighboring lakes.

First is noticed Lugano Paradiso nestling at the foot of the slopes of Mount Salvatore; and a little farther on the town of Lugano itself, which is delightfully situated, enjoying a very equable climate, being mild in winter, yet avoiding the excessive heat of the long, hot summers (see page 951).

There are several things that make a halt here very enjoyable, both from a historic and scenic standpoint. Our very dwelling, the hotel, has figured prominently in history of ages past, being a convent till suppressed in 1848. The town is quite old, and among its other treasures is the Church of San Lorenzo, having a wonderful decorated marble façade in early Renaissance style, and the convent chapel of Santa Maria Degli Angeli, containing most beautiful frescoes by Luini.

A few hours spent in a trip by a cog railway to the top of Mount Salvatore repays one very well by the wonderful view, spreading out in all directions, and from its summit, on a clear day, many of the lakes of northern Italy may be seen, including those of Garda, Orta, and Varese.

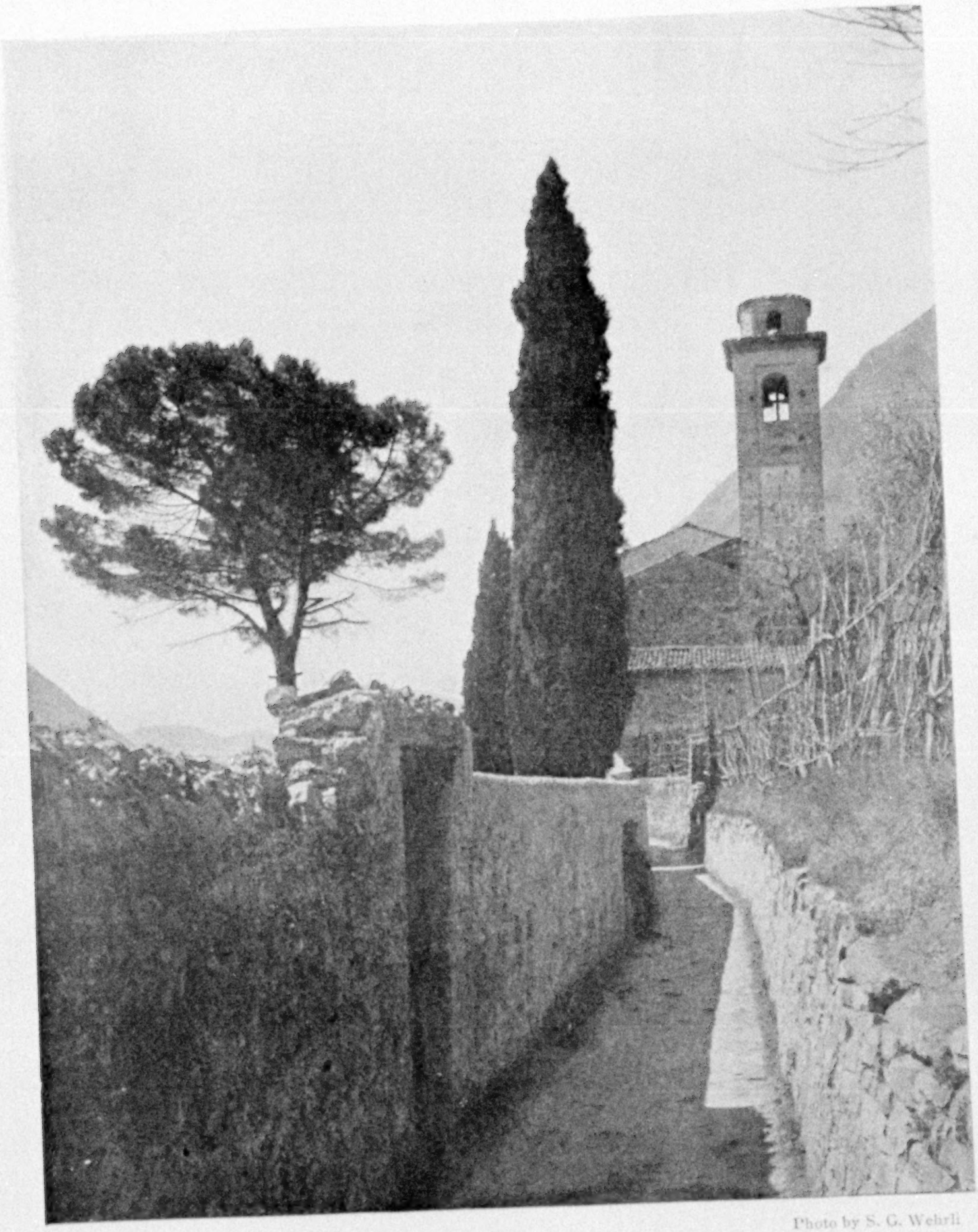


Photo by S. G. Wehrli

THE CHURCH AT ORIA ON LAKE LUGANO

Switzerland is a trilingual country, speaking French, German, and Italian. Some of its inhabitants use all three. The canton of Ticino, the southernmost in Switzerland, is the only one, however, which is completely Italian in nature and in speech. One of the most striking contrasts in Europe can be found by passing through the St. Gothard tunnel. On the north everything is German-Swiss; the houses are typical wooden Swiss chalets, and the costumes of the people show the Teutonic influence. A few minutes in the train and all is changed. The houses are now the picturesque white structures of southern Europe; the churches, the costumes, and the speech are all entirely Italian. The vegetation is also different in character, and here are found the mulberry, almond, olive, and orange. Oria was for many years the home of the Italian poet, patriot, and novelist, Antonio Fogazzaro, who is known to American readers from his novel, "The Saint."

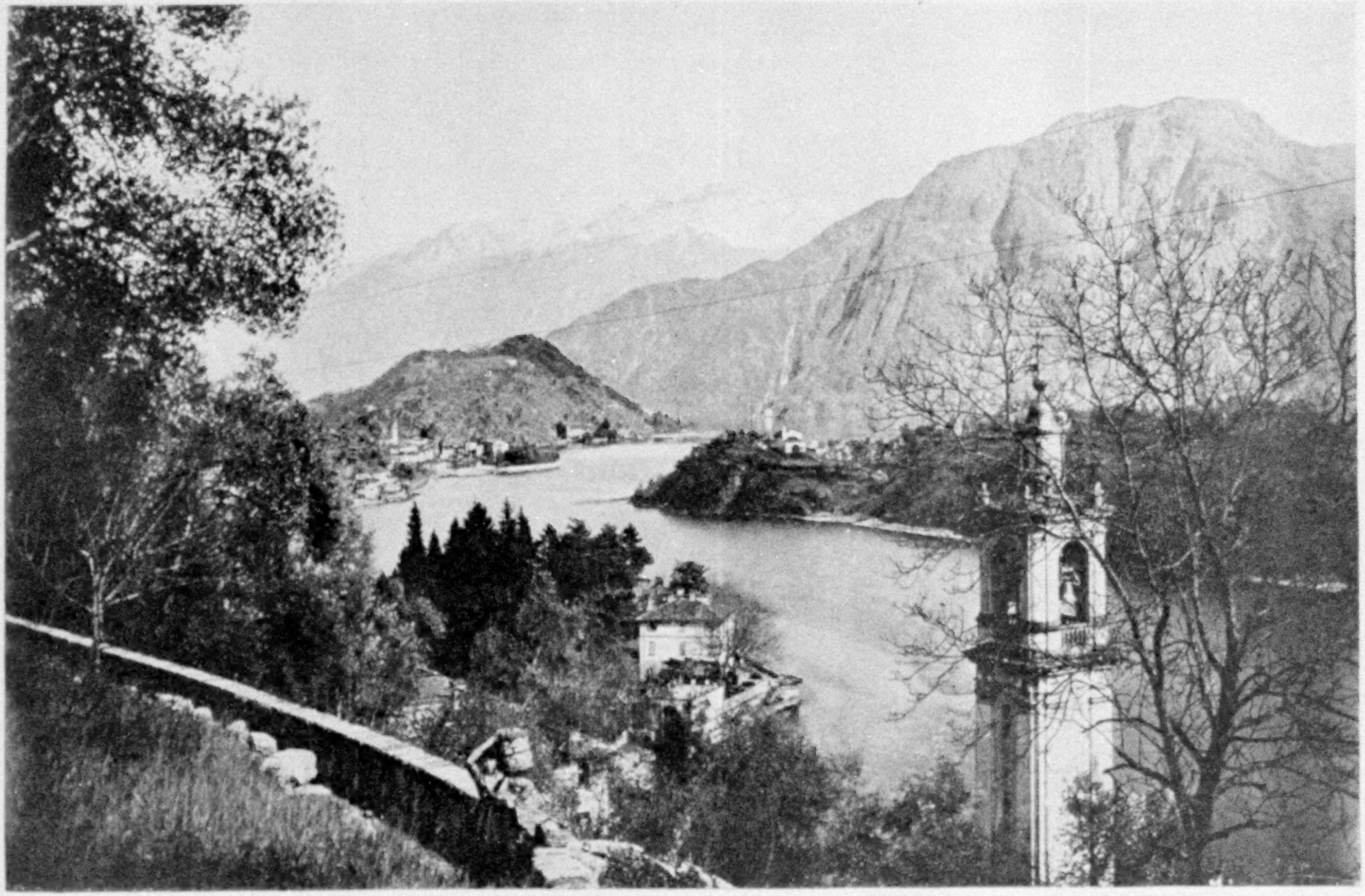


Photo by S. G. Wehrli

LAKE COMO FROM SALA

While not the largest, Lake Como is certainly the most beautiful of all the Italian lakes. Here is every element of natural beauty—the clear, blue waters of the lake, the lofty mountains with the snow-clad peaks of the Alps rising behind them, the indescribable tints of the trees, the vineyards and the olive groves, while over all is the soft blue of an Italian sky. Poets from the time of Virgil have sung its charms, and all that art could add to nature has been done to increase its attractions. Its banks are gay with luxuriant gardens, in which stand the villas of the Milanese aristocracy, and every few miles finds some quaint white village or town.

XUM

Photo by Arthur E. Mayer

BELLAGIO

"On one of these stands Bellagio as a jewel in the crown of nature, situated about half way up Lake Como, where the southern extremity of the lake divides into two bodies of water, the other being called Lake Lecco. It is a charming location and the town no less interesting, for here we have the busy arcades where the merchants display their wares of local industries" (see page 943).

950

Photo by Arthur E. Mayer

LAKE COMO AT MENAGGIO

Menaggio is a quaint little town enjoying a marvelous view over the lake, and here the effects of the winds peculiar to this sheet of water can best be observed. During the morning the wind, known as the *Tivano,* blows from the north; each afternoon it veers to the south, when it is called the *Breva.* This change takes place daily with singular regularity; but, like other Alpine lakes, Como is not free from sudden and violent storms.

XUM

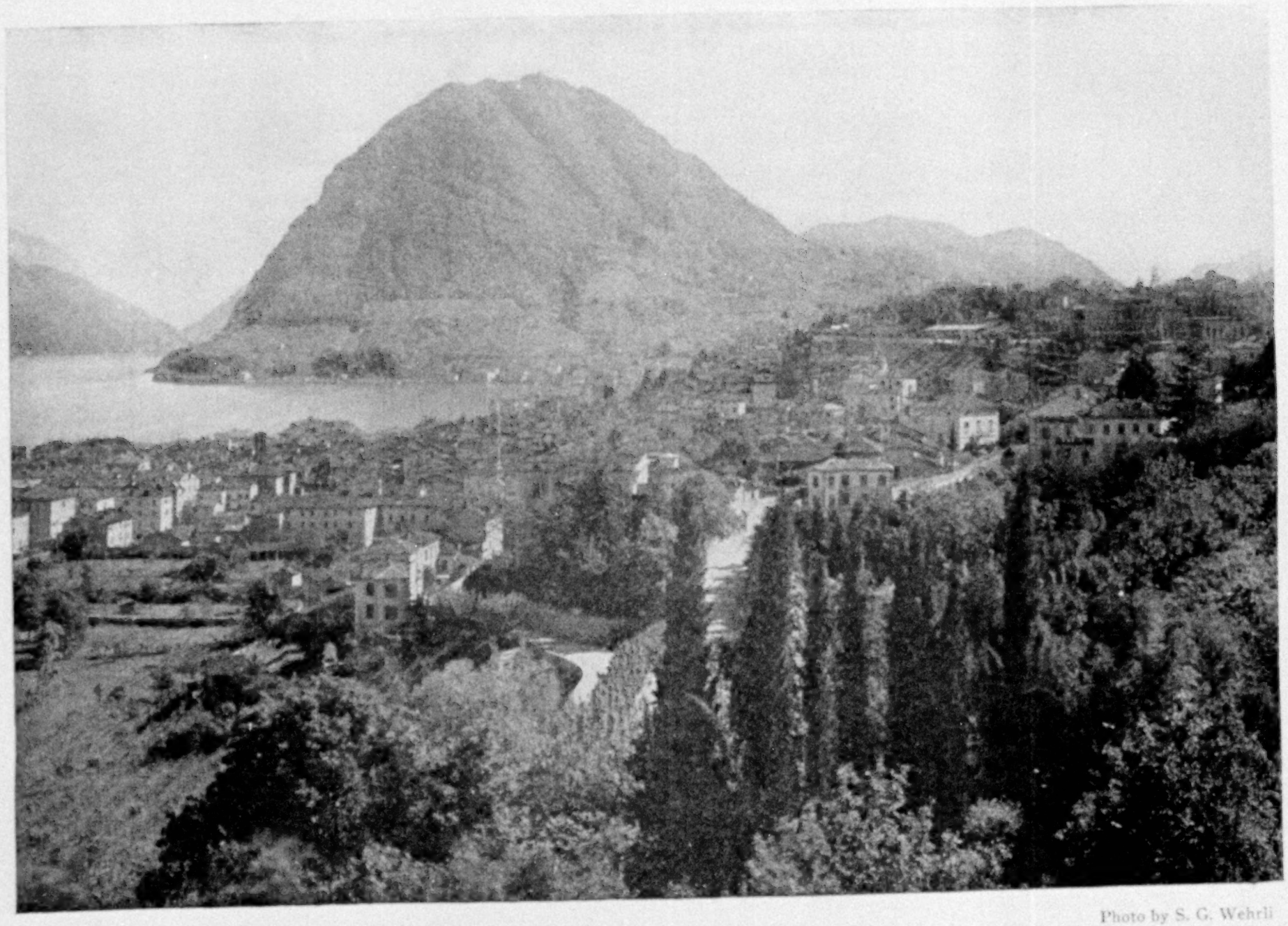


Photo by S. G. Wehrli

LUGANO

Lugano, the largest town in the Canton Ticino, stands amid wonderful scenery. It enjoys, perhaps, one of the most charming situations in Europe, lying at the foot of Monte Brè, with its cherry and almond trees and vine-covered slope, amid which nestle picturesque white villas. To the south it is dominated by Monte Salvatore (3,004 feet), while it fronts upon the head waters of the beautiful mountain-fringed lake. Despite its Swiss allegiance, Lugano is thoroughly Italian in appearance and character.

KUM

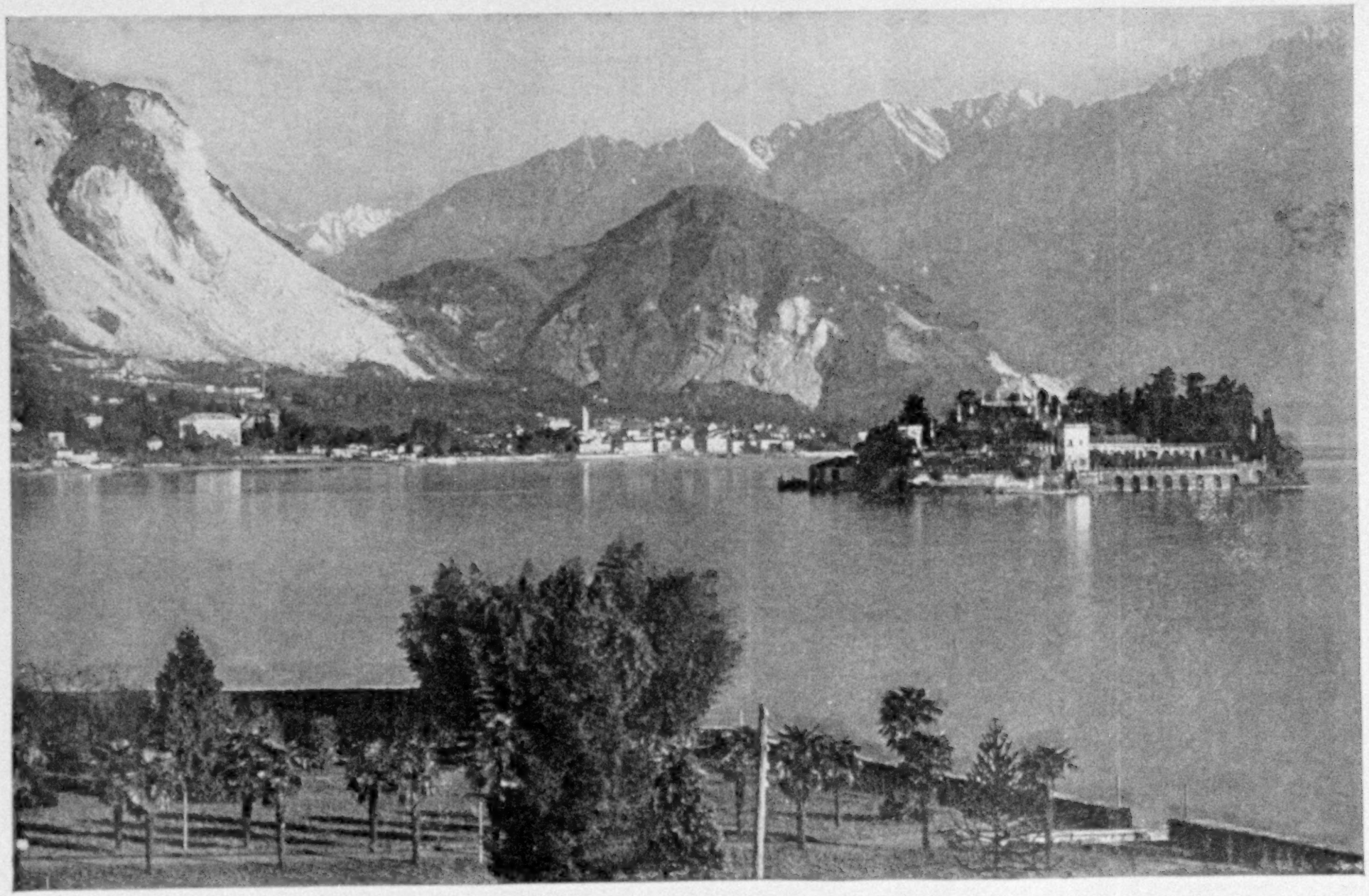


Photo by Arthur E. Mayer

ISOLA BELLA FROM STRESA

"Previous to 1670 it was nothing but a barren rock, without vegetation and subjected to the washing of the waves, which had dashed against it for centuries, almost severing it in twain. At that time Count Borromeo started the great task of making it into the fairy place it is today. . . . Thousands of boat-loads of rich earth were brought from the mainland and distributed over the rocks in sufficient depth to insure vegetation its proper nourishment. This being accomplished, the chateau was built and finished in a lavish manner" (see page 956).

XUM

XUM

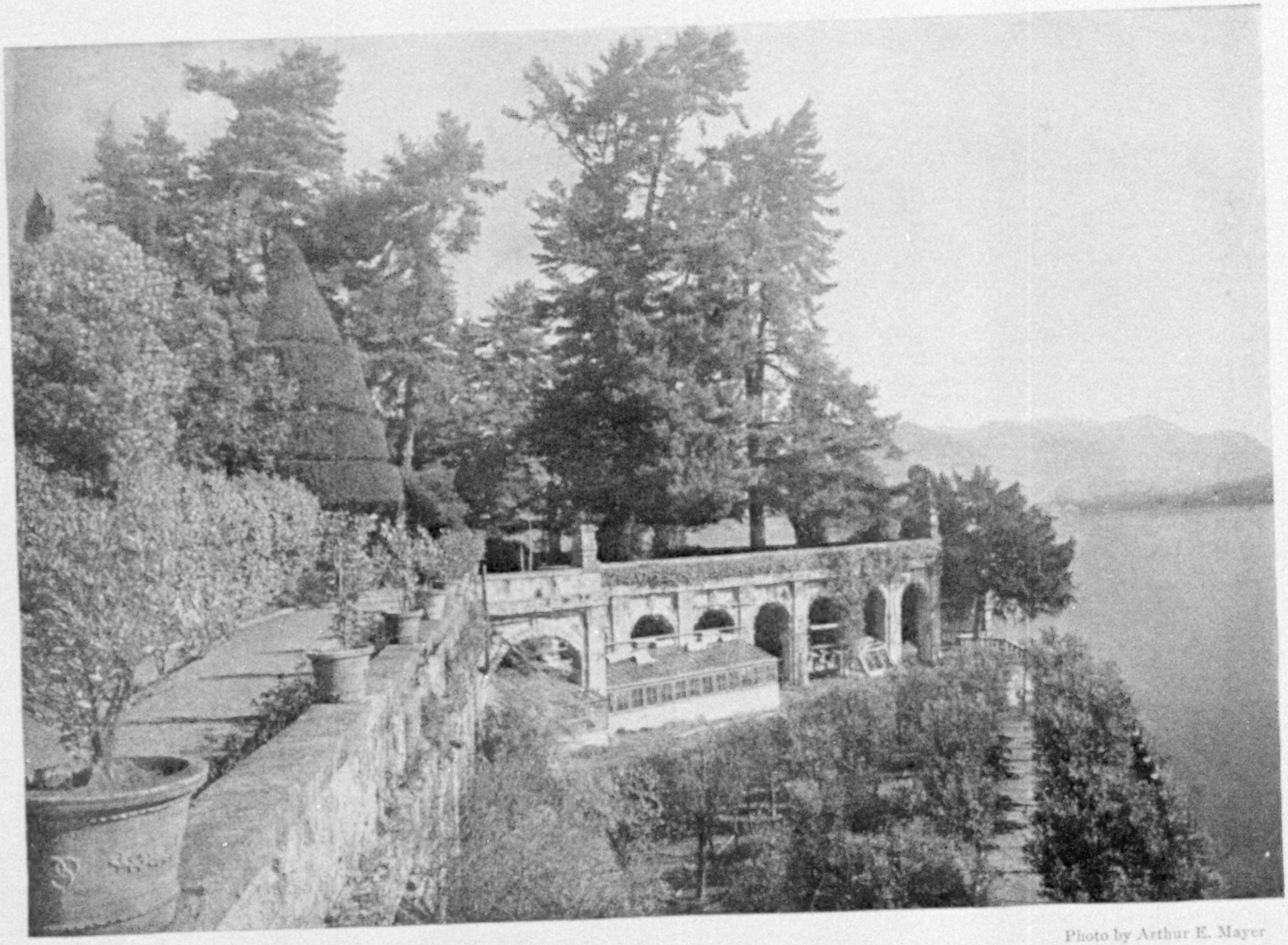


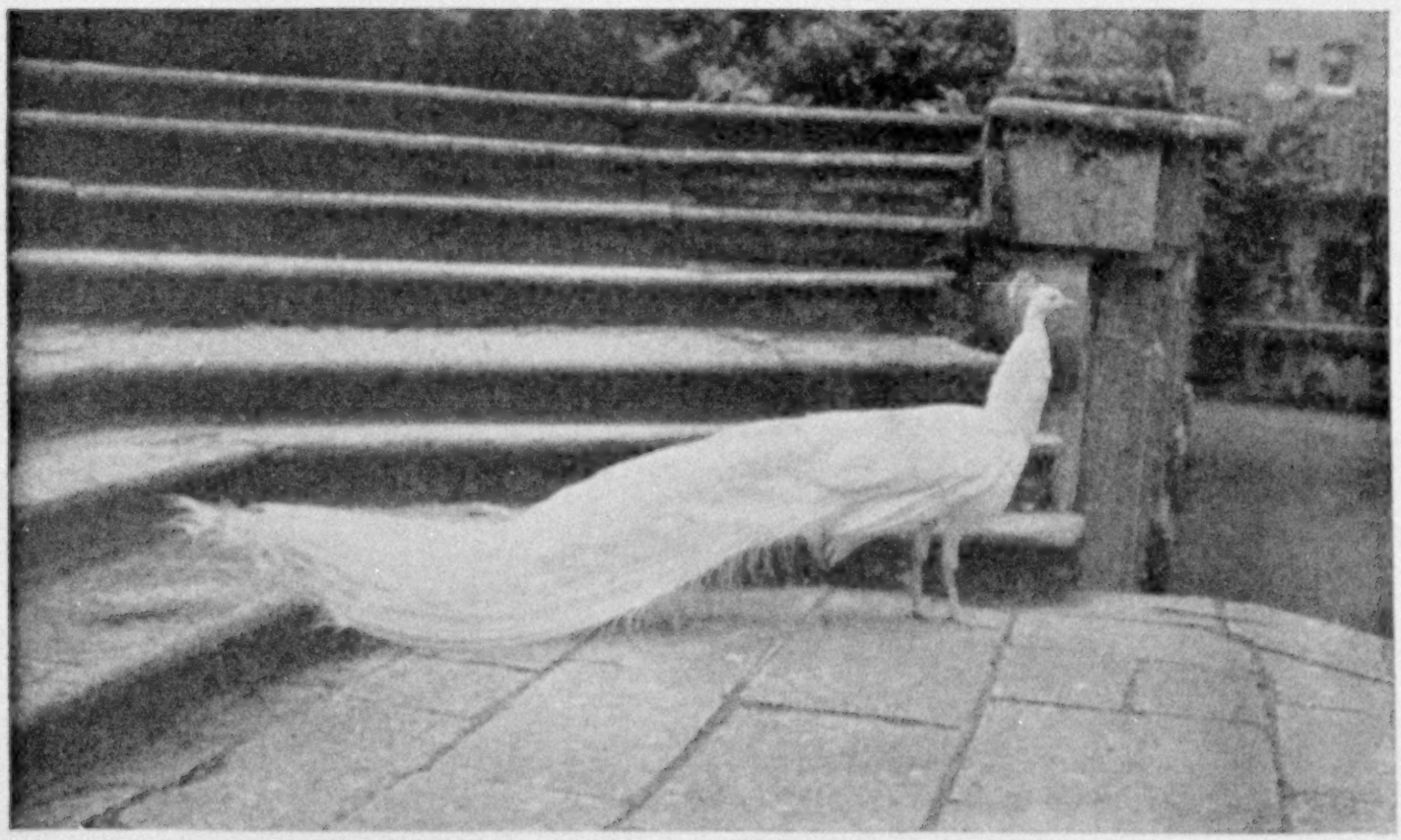
Photo by Arthur E. Mayer

THE TERRACED WALKS OF ISOLA BELLA

Isola Bella, the most famous of the Borromean Islands, is the gem of the Italian lakes. Originally a barren rock, it was transformed about 1670 by Count Vitaliano Borromeo, who made it his summer home. The magnificent gardens, rising in ten artificial terraces, 100 feet above the lake, are stocked with a wealth of beautiful trees—camillas, oleanders, magnolias, cypresses, cedars, and palms. The chapel of the chateau contains the exquisite Renaissance tombs of members of the Borromeo family, who were powerful nobles of Milan.

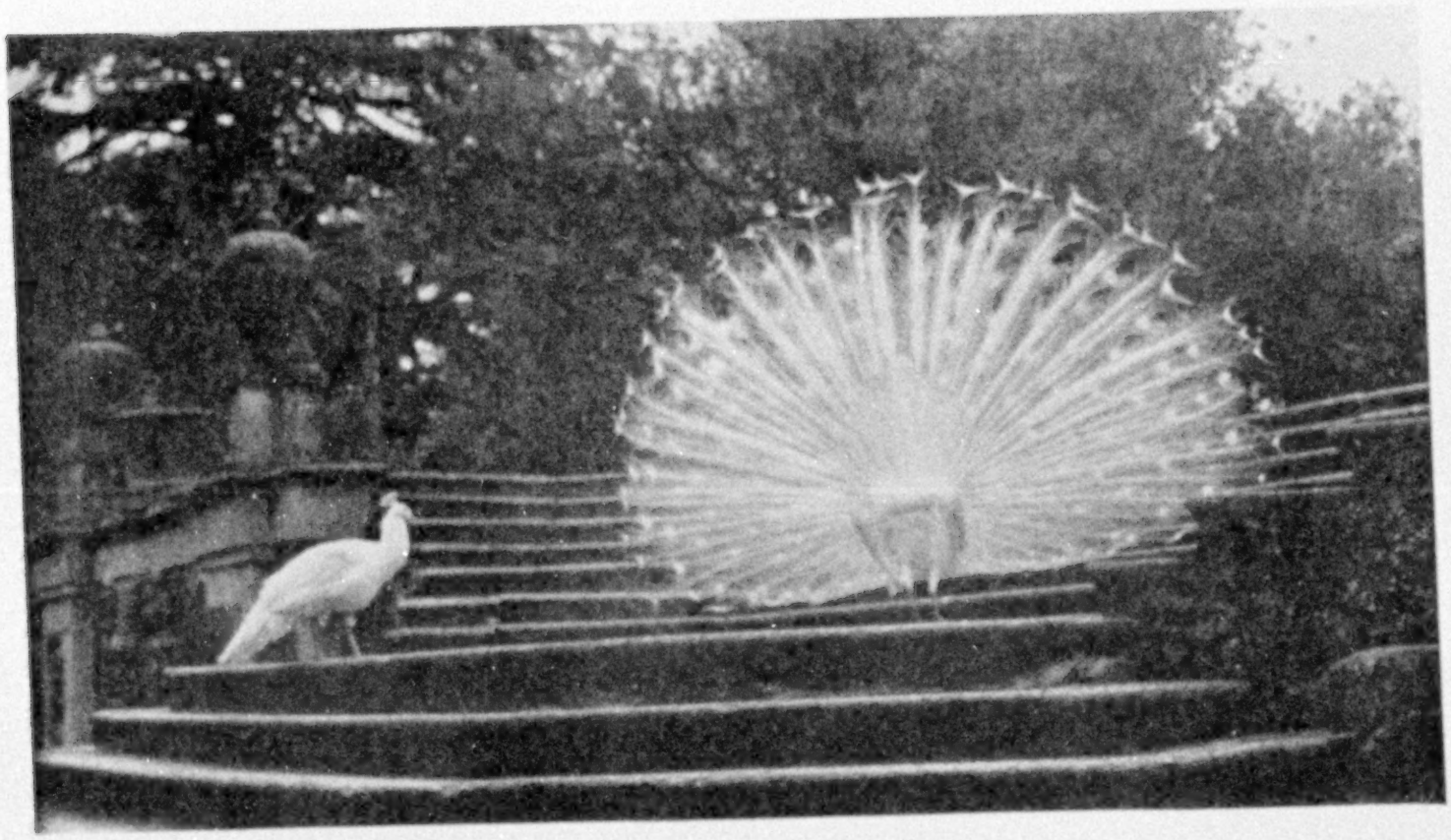
A PEACOCK OF ISOLA BELLA

Among the terraces and the beautiful shaded walks of the Isola Bella strut a flock of pure white peacocks, which seem ever ready to welcome the visitors and display their beautiful snow-white plumage. No Italian who owns a formal garden considers his domain complete without one or two of these graceful birds.



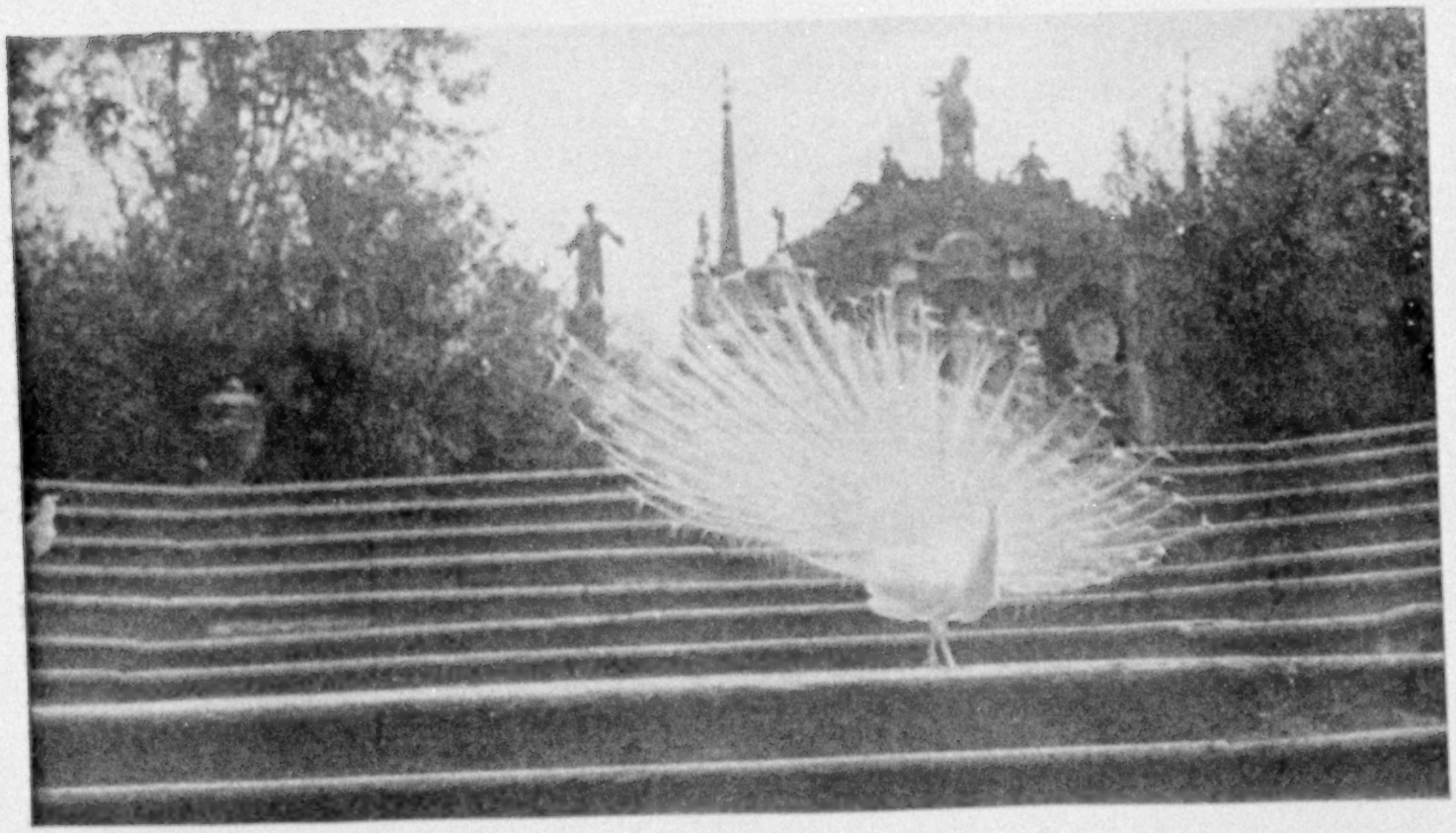
A BIRD ONCE SACRED

The peacock has been esteemed for its beauty from the earliest times. It was, among the Greeks, considered sacred to the Goddess Hera, and there are constant references to it among the Greek poets. King Solomon imported it into Palestine to add to the magnificence of his court at Jerusalem.



HUSBAND AND WIFE

The magnificent plumage of the peacock belongs only to the male, and it may be noticed that the female to the left of the picture is far less handsome than her husband, who presents us with a back view of his outstretched tail. These birds were once highly esteemed as food, and in the middle ages always figured at the most sumptuous banquets, roasted, but in all the glory of their gaudy plumage.



IN ALL HIS PRIDE

The peacock is the proverbial personification of pride, and indeed he has good reason to be proud, for the old proverb that "fine feathers make fine birds" is nowhere truer than in his case. As an embodiment of beauty and grace, there are few things that equal a peacock "in his pride," as the heralds describe him when they emblazon him on a coat-of-arms with his tail outspread.

LAKE MAGGIORE

A short journey by rail brings one to the edge of Lake Maggiore, which though limited to a certain extent in its beauty area, is unsurpassed in parts. The northern portion is by far the best, the beauty culminating in the neighborhood of Stresa. It was called by the Romans Lacus Verbanus, and is, as its name implies, the largest in the vicinity, being forty miles long and in places six to seven miles wide. It is a beautiful and picturesque ride down the lake, passing many summer homes and villas, with their lovely surroundings, nestling in peace at the foot of the many mountain peaks, and one may hear the distant tingle of bells from the herds quietly grazing in some far-off pasture.

One of the first places of interest to the traveler is Laveno, situated on the west coast of the lake and near the mountain of Tasso del Ferro. From the summit the white marble Cathedral of Milan, over 40 miles away, can be seen distinctly, with its many turrets and pinnacles.

Across the lake lies Pallanza, a busy little town at the foot of Mt. Rosso, which is more of a winter resort, owing to its receiving the warm southern winds.

BORROMEAN ISLES

Proceeding southward on our journey, we encounter the interesting Borromean Isles, which are four in number—Isola S. Giovanni, Isola Bella, Isola Madre, and Isola Superiore—the first three belonging to the noble family of Borromeo.

Isola Madre is a charming place, built with seven terraces, having gardens containing rich and rare tropical fruit-trees and flowers growing in profusion. It is well kept and a fine place to spend a pleasant hour or so, enjoying such a collection of nature's growth.

ISOLA BELLA

This island is thoroughly artificial and rather more curious than beautiful, with terraces, formal gardens, and groves, which contrast with the wildness and simplicity of some of the islands of this group (see pages 952 and 953).

It has an interesting history, for previous to 1670 it was nothing but a barren rock, without vegetation and subjected to the washing of the waves, which had dashed against it for centuries, almost severing it in twain. At that time Count Borromeo started the great task of making it into the fairy place it is today by quarrying the rock from places and filling it in others, building the arches, terraces, and buttresses.

Thousands of boat-loads of rich earth were brought from the mainland and distributed over the rocks in sufficient depth to insure vegetation its proper nourishment. This being accomplished, the chateau was built and finished in a lavish manner, many of the original articles still remaining intact, such as furniture, draperies, curious and personal effects of the various residents. Among other things of historic interest here is the bed in which Napoleon slept the night before the battle of Marengo.

There are a number of terraces, one built upon another, spacious walks encircling the island and shaded by fine old trees of every shape and kind.

Amid these surroundings strut a flock of pure white peacocks, which seem ever ready to welcome the visitors and display their beautiful snow-white plumage (see pictures, pages 954 and 955).

There is a most exquisite view of the distant bold mountain peaks of some of the higher Alps, including Mt. Rosa, the Strahlhorn, and the twin white forked peaks of the Simplon.

On Isola Superiore is a charming little fishing village, very compact and contrasting with the clean and neat island just described.

The white town of Stresa lies on the edge of the lake, while on the mountain slopes back of the town are verdant pastures for the grazing of the herds. A very fine view is to be had from here of the Borromean Isles, lying but a short distance to the northward.

Mt. Mottarone, which is near here, rivals the Rigi of Switzerland in the fine view to be had from its summit. The plains of Lombardy and Piedmont spread out in panorama, while their rivers appear as ribbons of silver interlacing them.

From Stresa we again take the train on our journey to Milan, thus completing the circuit of the lakes.

THE HAND BOOK
1913

as published by this House is
for the convenience of our
Patrons who are traveling or
who reside at a distance.

Forwarded to any part of
the world upon request.

The Hand Book
illustrates, describes and prices our
newest Productions and Importations.

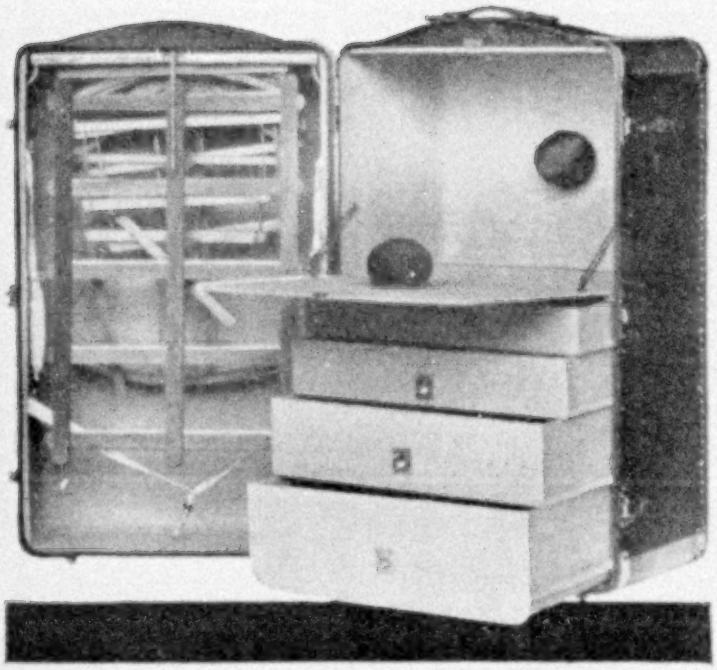
JEWELRY – SILVER
GLASS — CHINA
MAHOGANY-WATCHES
CLOCKS – NOVELTIES.

Silver Services or other articles wanted
can be selected by sending for special
PHOTOGRAPHS. When requesting
photographs kindly give some idea of
the price limit to be observed.

BAILEY, BANKS & BIDDLE CO.

Diamond Merchants, Jewelers,
Silversmiths, Heraldists, Stationers.

Chestnut Street, Philadelphia



Ask Your Dealer for THE INDESTRUCTO SPECIAL WARDROBE

The only $40 Wardrobe Trunk

that gives you a choice of five interior arrangements

The Indestructo is the original round-corner, jointless, and "smashless" trunk.
The Indestructo is the original Guaranteed-Against-Any-Kind-of-Damage Trunk.
Only the Indestructo is Registered against loss always.
It was an Indestructo trunk that traveled 105,000 miles around the world for $25.
It was an Indestructo that dropped 235 feet uninjured at Bullock's Store in Los Angeles;
An Indestructo that came all the way from Ireland to find "a lost owner."

BUY INDESTRUCTO BAGGAGE

Every history-making event in the trunk field begins and ends with an Indestructo trunk.
It is the original, the pioneer—the leader in value, price, strength, service, convenience, and appearance.
Any Indestructo owner would get a new trunk free if his Indestructo were destroyed by fire, accident, wreck, or careless handling within 5 years from the day he bought it.
No other trunk in the world carries this guarantee, because no other trunk is built to stand the same racking abuse.
The Indestructo is the trunk you want—the only safe trunk to buy or to travel with.
Remember the name—"**Indestructo.**"
Remember the guarantee—"PROTECTION *always—everywhere.*"
Write today for the Indestructo Travel Book and the name of your nearest dealer.

NATIONAL VENEER PRODUCTS COMPANY
2508 BEIGER STREET MISHAWAKA, INDIANA

J. M. Shock Absorber

Here is proof that will convince any man on earth:

J. M. Efficiency Begins Where Laminated Springs Fail.

Diagrammatic records made by the car of Earle L. Ovington, the famous aviator, on Boston's finest boulevard — Commonwealth Avenue — prove more convincingly than volumes of generalizations the fact that

you *need* J. M. equipment on *your* car

not only for protection against jolting on rough roadways, but also for continuous service on the best city streets.

We have prepared an interesting booklet giving the full results of the noteworthy Ovington experiments on shock absorption—conducted with scientific accuracy over roads of various sorts. The facts contained therein should be known to every well-informed motorist.

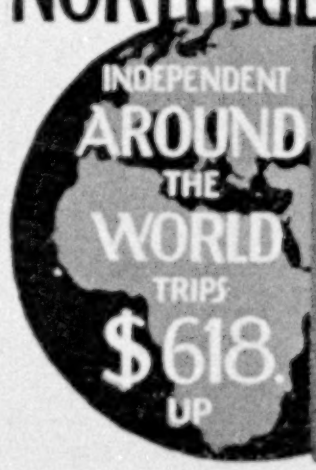
Send your name and address—a postal will do—and a copy will immediately be forwarded, postpaid.

The J. M. SHOCK ABSORBER CO., Inc.
208 S. 17th St., Philadelphia, Pa.

Branches in New York, Chicago, Cincinnati, Buffalo, Rochester, Atlantic City, Cleveland, St. Louis, Boston, Pittsburgh, Baltimore, Washington, Hartford, Los Angeles, San Francisco, Jacksonville, Syracuse, Providence, Erie, Seattle, Portland, Ore., Orlando, Fla.

Branches in every civilized country

NORTH GERMAN LLOYD



EUROPE, Mediterranean, Egypt, India, Ceylon, Java, China, Japan, Philippines and Hawaii. Start any time, any place, either direction. Tickets good two years.

TRAVELERS' CHECKS GOOD ALL OVER THE WORLD

Write for our Booklet "$618 Round the World Trips"

OELRICHS & CO., General Agents
5 Broadway, New York
H. Claussenius & Co., Chicago
Central National Bank, St. Louis
Robert Capelle, San Francisco
Alloway & Champion, Winnipeg

Going to EUROPE

via the **Baltimore-Southampton-Bremen service** of the North German Lloyd means traveling in comfort and safety (excellent service—delicious meals) on large modern ONE-CLASS (II) Cabin steamers, at surprisingly small cost.

Write today for particulars of rates and sailings, and send 10c. for valuable travel guide, **"How to see Germany, Austria and Switzerland,"** by P. G. L. Hilken, who tells with terseness and lucidity "what to see and how to see it"—a book of 100 pages, over 200 illustrations.

A. SCHUMACHER & CO., General Agents
271 S. Charles St. BALTIMORE, MD.

The Merger of East and West

"But there is neither East nor West, Border, nor Breed, nor Birth,
When two strong men stand face to face, tho' they come from the ends of the earth!"
—KIPLING.

In the "Ballad of East and West," Kipling tells the story of an Indian border bandit pursued to his hiding place in the hills by an English colonel's son.

These men were of different races and represented widely different ideas of life. But, as they came face to face, each found in the other elements of character which made them friends.

In this country, before the days of the telephone, infrequent and indirect communication tended to keep the people of the various sections separated and apart.

The telephone, by making communication quick and direct, has been a great cementing force. It has broken down the barriers of distance. It has made us a homogeneous people.

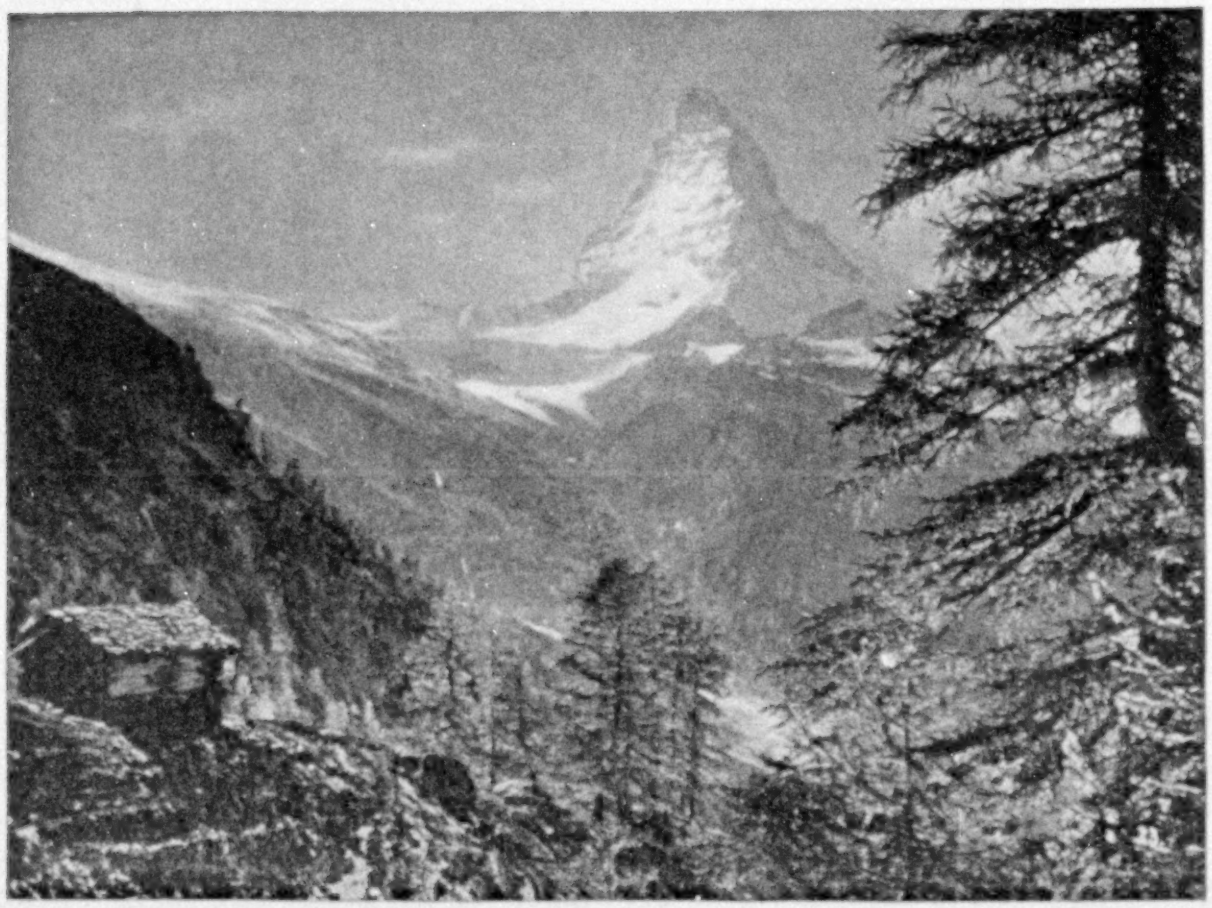
The Bell System, with its 7,500,000 telephones connecting the east and the west, the north and the south, makes one great neighborhood of the whole country.

It brings us together 27,000,000 times a day, and thus develops our common interests, facilitates our commercial dealings and promotes the patriotism of the people.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy ***One System*** ***Universal Service***

"Mention the Geographic—It identifies you."



THE MAJESTY OF THE MATTERHORN

17 x 22 inches, on heavy artist-proof board, ready for framing, 50 cents, postpaid.
Framed, $4.00, express collect.

THE LURE OF THE FROZEN DESERT

Photogravure, 9 x 23 inches, ready for framing, 50 cents, postpaid
Framed, $3.00, express collect.

PANORAMA OF THE CANADIAN ROCKIES

By Charles D. Walcott, Secretary of the Smithsonian Institution

It is impossible to show this wonderful picture in miniature, as it is 9 feet long. This splendid panorama of snow-covered peaks, pronounced to be the most marvelous mountain photograph ever taken, makes a beautiful framed picture or frieze, 9 feet long by 9 inches high. A limited edition on heavy artist-proof board, unfolded, is available at 50 cents, postpaid.

TIMELY MAPS PUBLISHED BY THE SOCIETY

Map of Central America, Cuba, Porto Rico, and Islands of the Caribbean Sea.—11½ x 19 inches, in 6 colors, 50 cents, postpaid.

Map of Countries Bordering the Mediterranean Sea.—9 x 18 inches, printed in five colors, 50 cents, postpaid.

Map of Mexico.—17 x 24½ inches, printed in 5 colors, 50 cents, postpaid.

Map of China and its Territories.—17 x 23 inches, printed in two colors, 50 cents, postpaid.

Geographic Art

THESE panoramas are published as supplements to the NATIONAL GEOGRAPHIC MAGAZINE, not merely because they are beautiful pictures but by reason of the fact that they are both educational and artistic. They were selected from hundreds of others to convey to the mind the most comprehensive conception of curious and characteristic corners of the earth—the great Sahara, the matchless Matterhorn, the Palms along the Nile, the wonders of Mt. Robson, in the Canadian Rockies, and the Frozen Desert.

THE MONARCH OF THE CANADIAN ROCKIES—ROBSON PEAK

They are superbly produced on heavy art-mat board, in exactly the proper tones to bring out the real atmosphere and surroundings. These pictures can be obtained nowhere else, and will be forwarded unframed or framed, as desired.

Arrangements have been made to supply a limited number artistically framed, with specially selected moulding in perfect harmony with the subject. The best French glass is used and a high quality of work guaranteed.

THE HOUR OF PRAYER IN THE SAHARA DESERT

7 x 18 inches, Photogravure in Satin Sepia, ready for framing, 50 cents, postpaid. Framed, $3.00, express collect.

THE DELIVERY OF PICTURES IN PERFECT CONDITION ASSURED

"The Hour of Prayer," 7 x 18 inches, photogravure in Satin Sepia, on Art-Mat Board, ready for framing, postpaid, 50 cents. Framed, $3.00 (Express Collect).

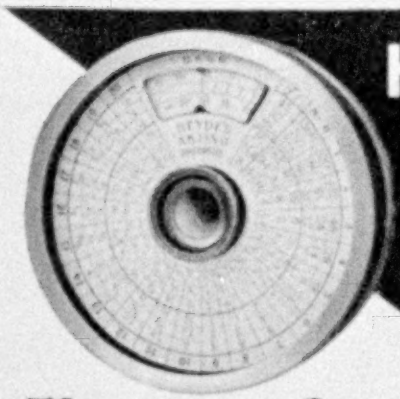
"The Palms," 10½ x 24 inches, photogravure in Satin Sepia, ready for framing, postpaid, 50 cents. Framed, $3.00 (Express Collect).

"The Majesty of the Matterhorn," 17 x 22 inches, ready for framing, postpaid, 50 cents. Framed, $4.00 (Express Collect).

"The Lure of the Frozen Desert," 9 x 23 inches, photogravure, ready for framing, postpaid, 50 cents. Framed, $3.00 (Express Collect).

Address, DEPARTMENT H, NATIONAL GEOGRAPHIC MAGAZINE, Washington, D. C.

XUM



HEYDE'S ACTINO PHOTO-METER

Eliminates Guessing in Photography!!

The simplest, most effective and most accurate instrument for determining correct time for exposure. Easily and quickly manipulated; compact and always ready for use.

No Sensitive Paper Used For Tinting.

Exposure Table complete on dial.
Essential to the Photographer who wants perfect pictures.

Order by mail or from your dealer.
Write for descriptive booklet.

HERBERT & HUESGEN CO.
456 Fourth Ave. New York.

Model 2 . . . $5.50
Model 3 . . . $7.50

Dealers: A postal will bring our special offer.

REGISTERED 3 IN 1 TRADE MARK

See that the *big red* "1" is on the label of the bottle. If it isn't, then you are not getting "3-in-One." And if you don't get "3-in-One" you don't get the best oil and the only oil for lubricating, cleaning, polishing and preventing rust. Try ten cents' worth for oiling sewing machine, typewriter, fire arms, clocks, locks, or polishing piano, table, chairs, preventing tarnish on nickel bathroom fixtures. FREE generous sample bottle and a valuable book. Write today.

THREE-IN-ONE OIL CO.,
42 UT. BROADWAY,
N. Y. CITY

HARRISON GRANITE COMPANY

Erected by Harrison Granite Company, in Oakwood Cemetery, Syracuse

DESIGNERS AND BUILDERS OF HIGH-CLASS MEMORIALS

BOOKLET ON REQUEST

200 FIFTH AVENUE :-: :-: NEW YORK

LITTLE "PHOSTINT" JOURNEYS

Are edited sets of the best color post-cards made. Each volume consists of the forty Phostint Cards which best represent a region or subject.

Some of the titles are:

Vol. VI. Quaint New Orleans.
Vol. III. Washington, D. C. Its Notable Architecture.
Vol. XXV. From the Mountains to the sea (in California).
Vol. XXXIV. Literary Landmarks of New England.
Vol. VII. The Yellowstone.

Per Volume, Postpaid, $1.00.

Dept. G, Detroit Publishing Co., Detroit, Mich.

Write for Booklet and Sample Card

TRY THESE IN YOUR POST-CARD PROJECTOR

This Magazine is from Our Presses

JUDD & DETWEILER, Inc.

Master Printers

420-422 Eleventh Street N.W.

WASHINGTON, D. C.

Out-of-Town Orders Solicited

Brand New Typewriter

Bennett $18 Portable Typewriter, marvel of simplicity, speed, efficiency, does work of $100 machines. All important improvements, visible writing, standard 84 character keyboard, etc. Slips in grip or pocket. Durable low-priced because only 250 parts. Others 1700 to 3700. Write at home, office, on train, everywhere. No special desk needed. Made by experts in same factory where $175 to $1000 Elliott-Fisher Billing Machines are made. Can send parcel post. Sold on money-back-unless-satisfied guarantee. Send for catalog. Special offer to live agents.

J.B.B. BENNETT TYPEWRITER COMPANY
366 Broadway, New York

Educate Your Child at Home

Under the Direction of

CALVERT SCHOOL, Inc.

(Established 1897)

A unique system by means of which children from kindergarten to 12 years of age may be educated at home by the best modern methods and under the guidance and supervision of a school with a national reputation for training young children. For information write, stating age of child.

Normal Department for Training Teachers. Circular on request.

THE CALVERT SCHOOL, 9 W. Chase St., Baltimore, Md.
V. M. HILLYER, A. B. (Harvard), Headmaster

Lasell Seminary

Auburndale, Massachusetts. Ten Miles from Boston

Courses in Language, Literature, Science, Music and Art, with thoro instruction in the theory and practice of Household Economics. Training is given in the Art of Entertaining, House Furnishing and Management, Marketing, Cooking, Dressmaking and Millinery. Tennis, Boating, Swimming, Riding and other sports are encouraged. Address

G. M. WINSLOW, Ph. D., Principal,
122 Woodland Road

FRENCH—GERMAN SPANISH—ITALIAN

Is Easily and Quickly Mastered by the

Language-Phone METHOD

Combined with the
ROSENTHAL METHOD OF PRACTICAL LINGUISTRY

This is the natural way to learn a foreign language. You hear the living voice of a native Professor pronounce each word and phrase. He speaks as you desire—slowly or quickly, night or day, for minutes or hours at a time. It is a pleasant, fascinating study—no tedious rules or memorizing. It is not expensive—all members of the family can use it. You simply practice during spare moments or at convenient times, and in a surprisingly short time you speak, read, and understand a new language.

Send for Booklet and Terms for Easy Payment

THE LANGUAGE-PHONE METHOD
980 Putnam Building, 2 West 45th Street, New York

I know that you will like this handy little fountain pen

My little Jack Knife Safety has converted thousands of fountain-pen skeptics into fountain-pen users. Here is a pen that can be carried right side up, upside down, or flat, or in any position in any pocket, or tossed carelessly into a lady's purse or suit-case or traveling-bag with white linen.

Geo. S. Parker.

PARKER

LUCKY CURVE

JACK-KNIFE SAFETY FOUNTAIN PEN

is a little wonder; it has the famous Lucky Curve that prevents the leak, a simple device that locks in the ink; it writes like a freshly dipped pen and as smooth as glass.

The Lucky Curve

The Lucky Curve is an exclusive Parker Pen feature and is the one big thing that has taken the leak and smear out of fountain pens.

The price of the pen illustrated is $2.50, plus 25c. with ring attachment, and is only one of hundreds of different styles at varying prices in Jack Knife Safety, Standard, and Self-Filling pens.

15,000 dealers sell Parker Pens on trial. If you can't locate a dealer, send for complete illustrated catalog.

PARKER PEN COMPANY
18 Mill St., Janesville, Wis.

NEW YORK RETAIL STORE, WOOLWORTH BLDG.

HIGH above all others in definition and depth of focus

For tourists, theatres, race courses, hunters, army and navy officers.

GOERZ TRIËDER BINOCULARS

are unquestionably the best. Our Trieder-Binocular *combines* large field of view, a magnifying power of 3½ to 12 diameters and brightness of image in most convenient and handy form. Optically and mechanically perfect. Easily adjusted. Just the thing for travelers.

Send for Special Binocular Catalog (

C. P. GOERZ AMERICAN OPTICAL CO.
319A-East 34th Street, New York City

REMOVAL NOTICE

ESTABLISHED 1905 INCORPORATED 1912

FISHER & BRYANT, INC.

CONSULTING FORESTERS AND TIMBER-LAND EXPERTS

ARE NOW LOCATED IN LARGER QUARTERS AT 39 ASTICOU ROAD, FOREST HILLS STATION, BOSTON, MASS., TWO MINUTES FROM FOREST HILLS RAILROAD AND ELEVATED STATIONS, DIRECTLY OPPOSITE THE BUSSEY INSTITUTION AND ADJACENT TO THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY.

TELEPHONE, JAMAICA-270

PACKARD SERVICE

The car best able to care for itself is cared for by the best service

Packard service means ability plus willingness to serve. Every Packard owner commands free of charge the services of a technical expert in inspecting his car and making minor adjustments. Packard dealers take the initiative in keeping cars running to the entire satisfaction of their owners.

Each dealer carries a carefully selected line of parts in stock and maintains a service department with all facilities for keeping Packard cars and trucks at their high point of efficiency.

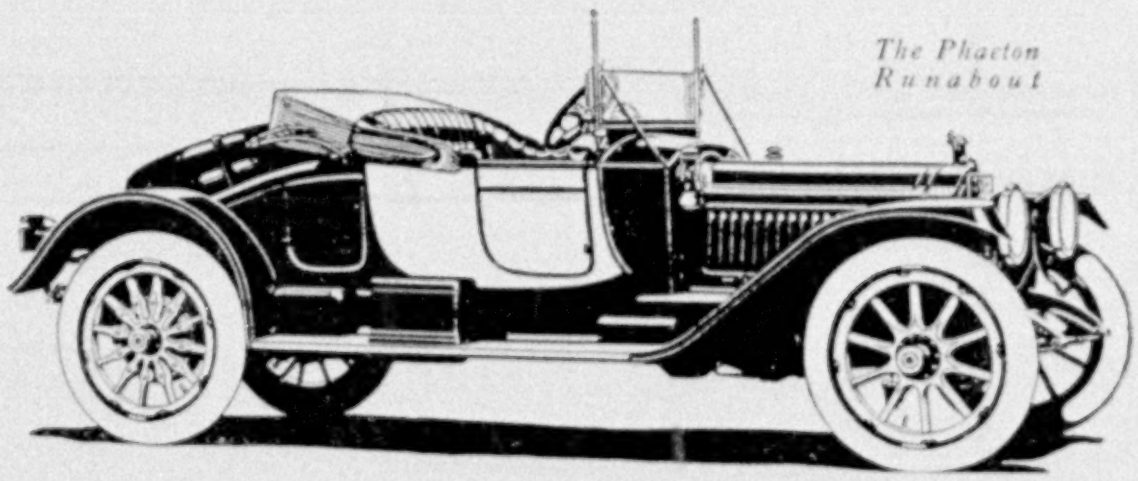
For Packard owners who tour abroad, the Packard Motor Car Company of Paris maintains a complete service depot at No. 5 Rue Newton, Paris.

In all Packard establishments the same consideration is extended to every Packard owner regardless of his place of residence or where he purchased the car.

Packard service follows the car:—one of the reasons why a Packard "38" or a Packard "48" bought this year will have a higher relative cash value next year or five years hence than any other car purchased at the same time.

Ask the man who owns one

Packard Motor Car Company, Detroit



The Phaeton Runabout

Where To Look For Merit

ALEXANDER WINTON makes the Winton Six. He does *not* make any other car. No other car embodies his experience. Mr. Winton founded the gasoline motor car industry in America. He is the world's most experienced specialist in six-cylinder cars. That's why it is unfair to any other car to expect it to show merit equal to Winton Six merit.

SET THE STANDARD

The Winton Six (not any other car) made six cylinders standard, and forced four-cylinder cars from the high-grade market. Supreme excellence did it, and you will find that supreme excellence in the Winton Six.

LOWEST REPAIR EXPENSE

The Winton Six holds the world's lowest repair expense record—29.2 cents per 1000 miles. No other car holds that record, or anything like it. If you want this sort of enduring goodness, look for it in the Winton Six.

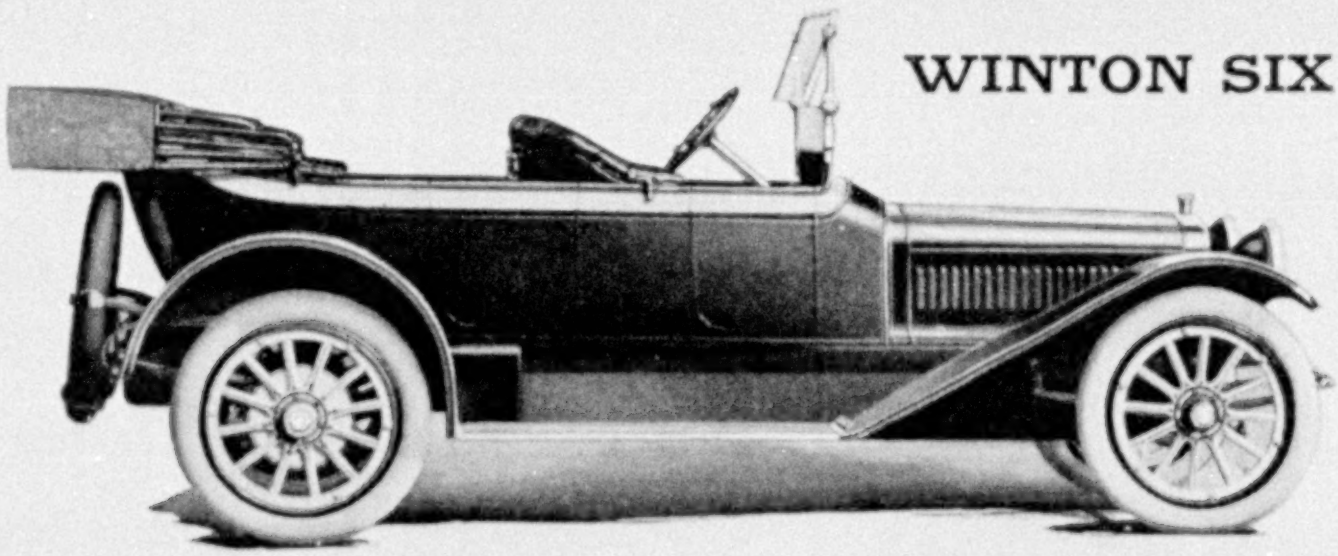
KEEPING AHEAD

For seven years Mr. Winton has devoted himself to the perfection of a single model exclusively. He has had just one aim—to keep the Winton Six ahead of all other cars in beauty, comfort, mechanical excellence, and value. No wonder the 1914 Winton Six is the fashion-plate of American motor cars.

GET THESE FACTS

Note this: Be careful in selecting a car this year, *more careful* than ever before. There are startling reasons why. We tell them in our Book No. 17. Shall we send you a copy?

The Winton Motor Car Co., 12 Berea Road, Cleveland, O.



WINTON SIX

Long stroke motor, left drive, center control, electric lights, self-starter, finest mohair top, easily handled curtains, rain-vision glass front, best Warner speedometer, Waltham eight-day clock, Klaxon electric horn, tire carriers, four-cylinder tire pump, demountable rims, full set of tools, German silver radiator, metal parts nickel finished. Fully equipped,

$3250

Globe-Wernicke
Sectional Bookcases

THE children may easily be encouraged to more regular habits of reading if they feel that they have an individual ownership and personal interest in the home library. Because of its sectional construction such provision for children's books is easily made, and within a very short time they will accumulate a sufficient number of books to have an individual library in their own rooms.

Or when they start to college, and wish to furnish their own dormitories, Globe-Wernicke sections being easily removed section by section, they will find great pleasure in retaining these books which have made their home life pleasant and profitable. Globe-Wernicke Bookcases are made in many styles, finished to suit the color schemes of different interior trims. Sold by fifteen hundred authorized agencies.

"Booklovers' Shopping List"—This little book lists the works of great authors and gives the prices of the same in sets. The list includes the low-priced, popular sets as well as the de luxe editions. Every book buyer should have a copy. Sent free with the Globe-Wernicke catalog. Address Dept. N. G.

The Globe-Wernicke Co., Cincinnati, Ohio

Branch Stores: New York - - 380-382 Broadway; Philadelphia, 1012-14 Chestnut St.; Chicago, 231-235 So. Wabash Ave.; Boston - - 91-93 Federal Street; Washington, 1218-20 F Street N. W.; Cincinnati, 128-134 Fourth Ave., E.

PRESS OF JUDD & DETWEILER, INC., WASHINGTON, D. C